The Bristol Medico-Chirurgical Journal.

"Scire est nescire, nisi id me
Scire alius sciret."

SEPTEMBER, 1913.

MEDICINE AND ITS PRACTITIONERS DURING THE EARLIER YEARS OF THE HISTORY OF BATH.[1]

BY

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IN thinking over a subject on which to address you, I found considerable difficulty in deciding. My desire was to choose a subject not too polemical, as I look upon these meetings more as the scientific side of our Society. There are occasions enough when we can thrash out what I might call the political or business work of the branch; I therefore refrain from referring to the Insurance Act and its working, which might be supposed to have a good deal of interest for members at the present time.

I shall ask your indulgence while I place before you some disjointed notes on medicine and its practitioners in Bath, as

[1] The Presidential Address at the meeting of the Bath and Bristol Branch of the British Medical Association, delivered at the Annua Meeting held in Bath, May 28th, 1913.

far as I have been able to gather, during the early years of its history. Agreeing with Mr. Balfour, as I do, that " to make the best use of the future one must never ignore the past," and as George Augustus Sala wrote, " There is to me an inexpressible charm in the lives of the good, brave, learned men whose only objects have been to alleviate pain and to save life," or as Emerson said, " Nature seems to exist for the excellent. The world is upheld by the veracity of good men. They make the earth wholesome. Other men are the lenses through which we read our own minds."

I thought it might not be amiss to consider how our predecessors in medicine bore themselves in their day. We are the heirs of their labours, and it becomes us to consider how we uphold and use their inheritance. Let us therefore " praise men of renown and our fathers in their generation." " And there are some of whom there is no memorial, who are perished as if they had never been."

Now, in looking up the lives of former Bath physicians one is struck by the fact that the men whose names have come down to us as prominent in the life of the city were all connected with the practice of the Bath waters. There may be one or two exceptions, but speaking generally, Bath physicians have distinguished themselves by their writings in connection with the waters.

Prebendary Scarth, in his history, says, referring to ancient Bath physicians, " It is most probable that a School of Medicine existed in Bath at an early period. The mineral springs being visited by many patients for their healing benefits would naturally cause the residence of eminent physicians in the neighbourhood." He shows, however, that there is no record of any of these or of their patients ; neither is there any account of a votive altar put up by a physician, as, for instance, at Chester ; neither has any memorial to a physician been discovered such as has been found on the line of the Roman Wall in Northumberland. The only thing to show that medicine was practised here during the Roman occupation was a medicine stamp, which was dug up in the Abbey Churchyard in 1731.

A Mr. Mitchell, of Bristol, had it in his possession for some time, but there is at present no trace of it. This stamp probably belonged to an empiric. It was a stone of greenish hue, perforated, and of oblong form. The inscriptions on it have been translated, from which it would appear he was an oculist. They are as follows :—

1st side. The thalasser of Titus Junianus for clearing eyesight.

2nd ,, The crysomelinum of T. Junianus for clearing eyesight.

3rd ,, The diexum or dryxum of T. Junianus for removal of old scars.

4th ,, The phœbum (or blistering collyrium) of T. Junianus for such hopeless cases as have been badly treated or given up by the physicians.

Scarth explains that the dryxum was probably compounded from gall nuts and used as an astringent.

Other medicine stamps have been found at Cirencester and Uttoxeter, and Dr. McCaul remarks that medicine stamps present more difficulty to the antiquary than any other Roman remains.

The reverend author, however, shows that the Roman armies which visited Britain were provided with medical officers, for he writes : " Notices of physicians who attended those Roman Emperors who visited Britain have been preserved. Thus, Scribonius Largus is stated to have accompanied Claudius, and Severus was attended by his own physicians." It would appear the emperor's son " Caracella attempted to induce his father's medical attendants to hasten the emperor's death," but for the honour of the profession failed in this. However, he took his revenge, for when he became emperor himself he caused the physicians to be put to death for not complying with his wishes. Truly a poor reward for doing one's duty.

The Romans held possession of Bath for four hundred years, and during that time it was greatly improved by them, and was a place of great resort for its waters. We have still our Roman baths to show and bear witness to this. After the

Romans left and during the Saxon dominion (577–1066) there seems to be no reference to medicine or its practitioners in Bath; still, we may assume there were "leeches" here as elsewhere in England, whose practice consisted of a mixture of magic and medicine; but when religious houses were founded the care of the sick was undertaken by their inmates, though there were no separate or individual practitioners. Every ecclesiastic was more or less a physician, and secular canons were trained in nursing. A recent writer says, "This much is certain, that Christianity, in so far as it consisted in tending the weak and suffering, in so far as it meant the formation of humane, gentle and beneficent purposes by organised combinations, was realised most fully in those early monastic retreats."

It may be interesting to add, as Bath was closely identified with the Benedictines, this community was the first religious body to study the science of medicine and to aim at a higher standard. We do not find among the Anglo-Saxons (according to Dr. Payne) any mention of high ecclesiastics as themselves leeches or of leeches reaching high ecclesiastical rank, such as we come across later among the Anglo-Normans.

The coming of the Normans, though it did not assist the progress of the science of medicine in England, as for nearly a century after the Conquest there is no trace of any Anglo-Norman medical literature, nevertheless made a difference in the social position of the medical profession. It is plain that the Norman aristocracy required physicians of their own nationality, as in the first place they did not understand or speak English, and secondly, they would probably despise the old Anglo-Saxon leeches. Besides, the Norman doctors were educated abroad, most of them at Salerno, and there was no school of medicine in England at the time; and so we find the first physician of whom we have an account in Bath was John De Villula, or as he was generally called John of Tours. He was appointed to the See of Somerset, which was then located at Wells (1088). The late Dr. Tunstale maintained the name was John de Pillula, in playful allusion to his earlier profession. Authorities differ as to whether he practised medicine in Bath. Warner, in his

history of Bath, says he was "an empirick, who amassed a fortune by imposing on the ignorance and credulity of the invalids who flocked to the healing waters of this city in search of ease and health," and that being anxious to safeguard his possessions, he became an ecclesiastic.

The late Austin King says John was at once chaplain and physician to William Rufus. He had amassed a fortune by the practice of physic, and was attracted to Bath by what he had heard of the medicinal fame of its waters; but other authorities do not consider he practised medicine here. Be that as it may, he proved himself a true friend of Bath; for after being appointed to the See of Somerset, which was then located at Wells, he removed the See from Wells to Bath. Bath, which had been burnt and sacked by Bishop Geoffrey, sallying from Bristol, he restored. He obtained from the king a grant of the whole of the city of Bath—the church, the abbey, the mint, the baths, rights, customs, tolls, etc., in pure and perpetual alms for the augmentation of the See of Somerset, and for the special end that he might set up in that place his episcopal chair. He rebuilt the city, erected a cathedral which for grandeur and beauty was only equalled by the later structures of Wells and Gloucester. The baths he restored or constructed; one called the Bishop's Bath and the other the Prior's Bath were for the free use of the public. So that he was justly called the second founder of Bath.

The beauty of the baths after De Villula restored them is spoken of by the author of a work called *Gesta Stephani*, written in 1138. "There is," says this writer, "a city distant six miles from Bristol, where through hidden channels are thrown up streamlets of water warmed without human agency, and from the very bowels of the earth, into a receptacle beautifully constructed with chambered arches. These form baths in the middle of the city, warm and wholesome, and charming to the eye. Sick persons from all England resort thither to bathe in these healing waters, and the strong also to see these wonderful burstings out of warm water and bathe in them."

It may be worth noting in passing that to this learned

physician is due the fact that the See of Somerset is known to-day as Bath and Wells. William of Malmesbury says that Bishop John " thought it not at all honourable to live without fame in a mere village (Wells), and had it in his mind to transfer his throne to Bath." In 1075 the Council of London decreed that the episcopal sees should be transferred from villages or small towns to greater centres of population ; but whatever his motive was, the canons of Wells were not resigned to the change.

The dispute was finally settled by Pope Innocent IV (1245), who ordered that the throne of the bishop should be in each of the churches of Bath and Wells ; that the election should take place in each church in turn, first at Bath, next time in Wells ; that the style of the bishop in charter and in seal should be henceforward " Bishop of Bath and Wells."

De Villula seems to have been rather severe with the monks when he was made bishop, " because they were stupid, and in his opinion mere barbarians, and he took away all the lands upon which they depended for food, and doled out by his lay stewards a scanty allowance. However, after a time, by the introduction of foreign monks, and the effect of his overlooking, he became reconciled, for in 1106 he made over again to the monastery what he had taken away. In a grant, after stating how he laboured, and at last duly effected with all decent authority that the head and mother church of the Bishopric of Somerset shall be in the city of Bath in the church of St. Peter, he says : " I have restored to them (the monks) the lands which I formerly held unjustly in my possession." His repentance is described as geographical, for though he made amends in Bath he made none in Wells.

He is described as a skilled physician, and a man of learning and refinement and of social tastes. In his life he was simple and fearless, in his death he was resigned, and he provided that whatsoever he had begun in life should be completed after his death. He died in 1122, after thirty-four years' pontificate, and was buried before the altar in his cathedral church of St. Peter, Bath.

There is a long interval before we meet with the name of another Bath physician. A writer in the *Practitioner* of December, 1905, suggests that John Phreas, or Free, a learned physician born in London at the end of the fourteenth or beginning of the fifteenth century might be considered a Bath doctor. Phreas was made Bishop of Bath and Wells, but he does not seem to have practised in Bath; indeed, he practised medicine only on the continent, and was bishop for only a month, as he died in Rome before taking up his residence at Wells. In a list of Bishops of Bath and Wells, given in Professor Earl's book (*Bath, Ancient and Modern*) his name is not included.

Perhaps I might just mention that Thomas Linacre, founder and first President of the College of Physicians, was made Dean of Wells after he took orders, and it requires no great stretch of imagination to think that he might have been interested in the baths.

We can gather what the condition of medicine about this time was in England from Linacre's biographer. He states: "The practice of medicine was scarcely elevated above that of the mechanical arts, nor were the majority of its practitioners better educated than mechanics. No society as yet existed independent of the monastic and ecclesiastical which could at all be considered learned." (The bishops or their vice-generals were the persons who could grant licences to practice medicine, in addition to the universities.) This was no doubt true as a general rule, though Linacre himself is an example of the very opposite. The age of scholasticism was being replaced by humanism. Linacre was described as a "medical humanist," and such medical men as could travel abroad, especially to Italy, to complete their education, were certainly among the best *literati*, so that in the fifteenth and sixteenth centuries medicine was closely allied to literature; and one characteristic of our early medical humanists was their altruistic tendency. Linacre, who founded the College of Physicians as well as Lectureships at Oxford, and Caius who wrote the epitaph of Linacre, and founded a college at Cambridge, are lasting testimonies to this trait.

Still, we must not suppose there were no practitioners amongst the people, as in 1543 an Act was passed for protection and toleration of those irregular practitioners who kept shops and who were called apothecaries; and it would seem that some of these at any rate attained to some eminence, as Henry VIII, even after the grant to the College of Physicians, appointed an apothecary to the Princess Mary. Indeed, it was not until after 1815, when an Act was passed which gave the Apothecaries' Society power to prosecute persons who practised without the licence—this did not, of course, interfere with anyone holding a surgeon's or physician's qualification—that medical men generally can be said to have been educated, as previous to this their education was entirely optional, and a great many were illiterate and uneducated. So it is not to be wondered at that few names have come down to us in Bath until the sixteenth century.

Before the dissolution of the monasteries the monks were under obligation to keep the King's Bath and some houses suitable for royal lodgings near it in proper order for the occasional use of the king, and in Henry III's reign (1235) a process was issued calling upon the monks to pay £13 11s. 0d. (equal to £300 of our money) for their repair. It was common practice up to the middle of the fifteenth century for males and females to bathe together *in puris naturalibus*, and Bishop Beckyngton in 1449 ordered that the distinguishing garments of breeches and petticoats be worn on these occasions. But it was not until the middle of the sixteenth century, after the baths had been granted to the Mayor and Corporation by Elizabeth, that a stop could be put to this practice.

Connecting the practice of the monks with the change after the Dissolution, we meet with the name of Abbot Feckenham. During Mary's reign he was appointed Abbot of Westminster, but was deprived of this when Elizabeth came to the throne. He seems to have obliged Elizabeth in some way while she was princess, and when she came to the throne she tried to induce him to accept the new order; but he refused, and suffered twenty-three years' imprisonment. He was sometimes released

on parole. It was during one of these intervals he resided in Bath, and being moved with compassion to see how the poor were excluded from the use and benefit of the medicinal waters, he built with his own means a small bath and hospital. It was furnished with seven beds for the most miserable objects who came to Bath for relief from her waters. It was at the corner of Nowhere Lane, and so near "The Leper's Bath" that the poor had little difficulty in stepping from one place to the other. He wrote a book with the heading, "This booke of sovereigne medicines against the most common and known diseases both of men and women was, by good proofe and longe experience, collected by Mr. Doctor Ficknam, late Abbot of Westminster (1576), and that chieflie for the poor which hath not att all tymes the learned phisitions att hande." In Freeman's book is a note that Dr. Caius, who succeeded Linacre as President of the College of Physicians, wrote a book (which was never published) called "De Thermis Britannicis," in which he gave a prominent place to the Bath waters, and the writer concludes from this that he must have practised at Bath for a time, probably after his return from Padua. He certainly practised at Cambridge, Norwich and Shrewsbury, and it is therefore possible that he was for a time at Bath.

I must confess to a feeling of satisfaction in the thought that Caius, who was the companion and fellow-lodger of Vesalius (justly named the Father of Modern Anatomy) at Padua and Aristotelian lecturer in conjunction with Realdus Columbus (also a great anatomist, who, if he did not discover, at any rate was the first to describe in writing the circulation through the lungs) was with some probability a Bath practitioner. As you are aware, Caius returned from Padua with the intention of introducing dissecting into England, and became one of the founders of Gonville and Caius College, Cambridge.

The next writer on the Bath waters is William Turner, D.D. He is frequently described as a Bath physician, but Freeman says he never practised at Bath, and indeed did not even know of the waters until he was Dean of Wells. Still, this does not preclude his practising at Bath, as he continued to practise

medicine during his whole life. I quote Woods' description of him: "William Turner, M.D., D.D., Dean of Wells, was born at Morpeth, in Northumberland, educated at Cambridge in trivials and afterwards for a time in the study of medicine. This person, who was very conceited of his own worth, hot headed, a busybody, and much addicted to the opinon of Luther, would needs in the height of his study of physics turn theologist, but always refused the usual ceremonies to be observed in order to his being made priest. . . . Sure it is that while he was a young man he went, unsent for, through many parts of the nation and preached the word of God, not only in towns and villages, but also in cities."

There is no record that he took a degree in Arts and Medicine. After being imprisoned, he travelled in Italy, and was made Doctor of Physic at Ferrara, where he was held in much esteem for his faculty. He returned to England under Edward VI, and was made Prebendary of York, Canon of Windsor, and Dean of Wells. He was "incorporated Doctor of Physic of Oxford," and practised amongst the nobility and gentry, and became physician to Edward Duke of Somerset. He also, as was the case with many laymen who were scholars, obtained a licence to read and preach. He left England when Mary ascended the throne, and went to Germany, and from there to Rome, and afterwards settled for a time at Basel. About this time he published a book on birds, "little in size but great in value." He was also a botanist, as Pulteney, referring to his book on herbs, says "the true era of botany in England must commence with Dr. William Turner, who was unquestionably the earliest writer among us that discovered learning and critical judgment in the knowledge of plants, and whose book of herbs will always grow green and never wither as long as Dioscorides is held in mind by us mortal wights." He returned to England under Elizabeth, and was much thought of for his two faculties and the great benefits he did by them. He became a member of the House of Commons, and he claims to be the first writer on the Bath waters in his book entitled *A Book of the Nature and Properties of Baths in England and of other Baths*

in Germany and Italy. The preface is addressed to his "well-beloved neighbours of Bath and Bristol, Wellis Wymans and Chard," and is dated from Basel, March, 1557. Fox says of him: "In scientific investigation he was patient, wise and imperturbable." In the theological controversies of the day he was "ignorant, contentious, querulous, lacking indeed all the great qualities needed in a religious reformer." We, however, have only to deal with the man of science, and in that capacity we recognise in Turner a man of genius, the calm and patient investigator, and to all intents and purposes the father of Bath water literatures. It may not be out of place to give one or two extracts from the book of this Father of English Physic, as he was called, as it tells us how they took the baths in Elizabeth's reign.

Turner writes: "Now for the manner of bathing. I will not set down what the *Physician* is to do, but leave that to his judgment and discretion, but what is fit for the patient to know; for there are many cautions and observations in the use of bathing drawn from the particular constitutions of bodies, from the complications of diseases, and from many other circumstances which cannot be comprehended in general only or applied to all bodies alike. But many times upon the success and the appearing of accidents the Physician must *ex re nata capere consilium*' and perhaps alter his intended course, and perhaps change the bath to a hotter or cooler, etc. In which respect those patients are ill-advised which will venture without their Physician upon any particular bath or to direct themselves in the use of it, and this is a great cause that many go away from hence without benefit, and then they are apt to complain *of our baths* and blaspheme the great blessing of God bestowed upon us." I should imagine there could be little doubt that he practised at Bath after this quotation. He gives directions for a patient when he enters a bath: "It is well to have the head covered from the air and wind and from the vapours arising from the bath, also the kidneys, if they be subject to the stone, anointed with some cooling Unguents as Rosatum comitissae, Infrigidans Galeni, Santolinum, etc. Also to begin quietly with the bath

till his body be inured to it, and to be quiet from swimming or much motion which may offend the head by sending up vapours thither." At his coming forth to have his body well dried and to rest in his bed an hour and sweat, etc. He says, "The morning hour after the sun hath been up an hour or two is fittest for bathing, and if it be thought fit to use it again in the afternoon it is best four or five hours after a light dinner." One wonders how a patient at the present day would manage to get his bath. "For the time of staying in the bath it must be according to the quality of the bath and the toleration of the patient. In a hot bath an hour or less may be sufficient; in a temperate bath two hours. For the times of continuing the baths there can be no certain time set down, but it must be according as the patient finds amendment. Somtimes twenty days, sometimes thirty, and in difficult cases much longer, and, he says, "therefore they reason without their host which assign themselves a certain time as perhaps their occasions of business will best afford." "For the time of the year our Italian and Spanish authors prefer the spring and fall, and so they may well do in their hot countries; but with us, considering our climate is colder and our baths are for cold diseases, I hold the warmest months in the year to be best, as May, June, July and August," and he adds, "I have persuaded many hereunto who have found the benefits of it." He says, "The variableness of our climate, and that people finding it temperate at noon, may be deceived as to the coldness of the mornings and evenings, and so offend weak constitutions." "Likewise in the bath itself, although the springs arise as hot as at other times, yet the wind and air beating upon them do them much harm and also make the surface of the water much cooler than the bottom." Therefore "it were to be wished that our Queen's Bath and Cross Bath, being small baths, were covered, and their slips made close and warm." "By this means our baths would be useful all the year, when neither wind and cold air in winter nor the sun in summer should hinder our bathing." And he adds, "I desire not novelties nor to bring in innovations, but I propound these things upon good grounds and examples of the best baths

in Europe, and so I desire to have them considered of, referring both this point and whatsoever I have said in this discourse to the censure of those who are able to judge." " I do purposely omit many things about the virtues and uses of our baths, which belong properly to the Physitian, and cannot well be intimated to the patient without dangerous mistaking, for as Galen saith, 'Our art of Physick goes upon two legs—reason and experience—and if either of these be defective our Physick must needs be lame. *Experience* was first in order.

> "'Per Varios usus artem experientia fecit
> Exemplo monstrante viam.'
> "'From much experience the art of Physick came
> Directed by example to the same.'

Reason followed, which without experience makes a mere contemplative and theoretical Physitian. Experience without reason makes a mere Emperick, no better than a nurse or an attendant upon sick persons, who is not able, out of all the experience he hath, to gather rules for the cure of others. Wherefore they must be both joined together, and therefore I refer Physitian's work unto Physitians themselves.' "

Dr. Turner refers frequently to the Physitians practising here, and that there were a good many about this time may also be gathered from Harrison's description of Bath, 1577–78, published in Holinshed's *Chronicles*. After describing Bath in Somersetshire (" where I parson Harrison have been ") and discussing the origin of its name, showing " the citie itself is a verie ancient thing no doubt as may yet appear by diverse notable antiquities ingraved in stone to be seene in the wals thereof,"[1] he discusses the origin of the heat of the waters. He says, " Dr. Turner, also the Father of English Physick and an excellent divine, supposeth that these springs doo draw their forces from Sulphur or if there be ani other thing mingled withall he guesseth that it should be Saltpetre because he found an obscure likelihood of the same even in the Crosse Bath." " But that they participated with anie Allume at all he could

[1] The stone had a Latin inscription, now defaced, others with inscriptions that can be read, also an inscription on a tomb.

never till his dieing daie be induced to beleeve." Harrison says Bath is very pleasantly situated and well supplied with water, and has four gates, bridges, etc. And describing the baths, he mentions the hot bath as being "very worthilie so called." "For at first coming into it men thinke that it would scald their flesh and lose it from the bone, but after a season and after that the bodies of the Commers there-to be warmed thoroughlie in the same it is more tolerable and easier to be borne." He says, "Hot houses in some countries are no better than brothels," and describing the King's bath, says, "It is compassed about with a verie high stone wall and the brims thereof are mured round about wherein lie two and thirtie arches for men and women to stand in separatlie, who being of the gentre for the most part, doo resort thither indifferentlie, but not in such lascivious sort as unto other baths and hot houses of the maine, whereof some write more a great deal than modestie should reveale and honeste performe." He speaks of the colour of the waters, and says, "At high noone and midnight all entrance into them is utterly prohibited, for at those two seasons and awhile before and after they boil and become so hot that no man is able to indure their heat or anie while sustain their force and vehement working." He then explains that on this account and "because of the filth which the diseased do leave in them, and so as to avoid any one catching a new disease from bathing, the baths are shut up from half an hour after ten o'clock in the forenoon to half an hour after one o'clock in the afternoon and likewise at midnight at which times the keeper of them resorteth to his charge, opening the gates and leaveth, or should leave, free passage unto such as come unto them." He continues: "Much money has been lately spent on the Baths and that they are better ordered, cleanlier kept, and more friendlie provision made for such povertie as dailie repaireth thither. But notwithstanding all this, such is the general estate of things in Bath that the rich men maie spend while they will and the poore beg while they list for their maintenance and diet, so long as they remaine there: and yet I denie not but that there is very good

order in that Citie for all." "But where shall a man find anie and equal regard of poore and riche though God dooth give these his good gifts freelie unto both alike. I would here intreat further of the customs used in these baths what number of Physicians dailie attend upon those waters, for no man (especially such as be able to entertain them) dooth enter unto these baths before he consult with the Physician."

With the exception of Dr. Turner and Dr. John Jones, the names of these numerous physicians are buried with them.

Jones was a Welshman, educated at Cambridge and Oxford, but principally at Cambridge, where he took his degree in medicine, and practised in Bath and sometimes in Nottinghamshire and Derbyshire. In 1572 he published his book on the Bath waters, its title was *The Bathes of Bathes Ayde Wonderful and most excellent against very many sicknesses. Approved by Authoritie. Confirmed by reason and dayly tryed by experience. With the antiquitie commoditie, propertie, Knowledge, use, aphorismes, diet, Medicine, and other things thereto to be considered and observed.*" The late Professor Earle fell foul of the title of the book as follows: "Dr. Jones was a Welshman, and he seems to have bungled in the English name of his book, which is quoted sometimes as the *Bathe of Bathes Ayde* and sometimes as *The Bathes of Bathes Ayde*, of which title the grammatical construction is not readily apparent." Jones might, indeed, be said to be the first author of Bath water literature, as he devoted a whole book to the subject.

It was a characteristic of the times for writers to dedicate their books to some powerful and eminent patron, and so we find Dr. Jones following the custom in dedicating his book to "The Right Honourable Henry, Earle of Pembroke, Lord Herbert of Kayderdid," etc. An extract or two from the dedication may not be uninteresting. He writes: "Democritus the most Ancient Philosopher of Abdera, Reader to the Prince of Phisicyans, Hippocrates, (right honourable Earle) most learnedly in his Epistle de Natura Humana, to the same Hippocrates recounteth how necessary it is for all men to know the arte of Phisike. Bicause it is not onlie an understanding most

honourable and profitable to lyfe. But also for that of all other it most manifestly setteth forth to the Sences the wisedome power providence and unmeasureable bountie of our almightie Creatour of which to be ignorant, it is great impitie, as Galen testifieth in his Thyrd Booke, ' De usu Partium.' " He goes on to explain " that of all sortes Phisike is to bee embraced, and of them cheefely which are endued with honourable dignities and waightie affaires of the Commonwealth." " For," he continues, " as wysedome (sister to Phisicke) dooth deliver the mynde from evill affectes and maketh us to live forever in perpetuall joye with Aungelles. So Phisike maintayneth health and expelleth sicknesses from the body making us live a long and lustie lyfe, as Galen in his workes (De Sanitate tuenda) most reasonablie teacheth." After explaining how necessary it is to have health in order to enjoy life, he tells my Good Lord how " all men ought to take care of their health as unless the body is sound the mind itself is affected and how sickness darkneth the mynde, dulleth the sences, and depriveth, deminisheth or depraveth the partes."

It would seem that even in Jones's time there were not wanting many critics ready to have their fling at an author, for he tells the " Noble and Prudent Earle " that " while sparing no pains nor fearing the reproachful words of the envious Momous and his capacious rabble," he published " An Ayde most profitable for all them that need it . . . seeing that among all the most marvellous works of nature there is none more wonderful, none more excellent, none more available to the help of the diseased . . . than the Baths natural of the Citie of Bath if they be rightly used and orderly observed, and as need requireth frequented."

He divided his book into four parts, or rather, as he himself says, " he included four books in one volume." The first book treats of the descent of Bladud, etc.; the second of the different opinions concerning the cause of the Hot Waters, what minerals are in them, and what are the qualities by which they work their effects; the third treats of the diseases for which the Waters are useful and things against nature, with all the

signs of the state of the sick and whole, through which the better Consultation may be had not only whether these Bathes will help or not, but also the Chyrurgians students in Physicke and all other capable of reason may fynde a most apte trade of understanding, comprehended in few words. The fourth and last book gives " Aporisms and brief rules how in and at the Bathes they shall use themselves, what meates and drinkes what cordiall comfortatines with most excellent purgations, clisters suppositoures etc. meet for every complection and purging humours, abounding with all other remedies against such accidents as grow by reason of hot Bathes and to what infirmitie every of the Bathes serve beste severally." He lauds his patron very profusely, ending by humbly beseeching " the Almighty to endue your good Lordship and the right honourable Lady Anne, your noble and moste virtuouse wife with Galens health, Nestors yeares, Crœsus welth and Augustus hapiness." Some of his " Aporisms " are rather quaint. The first runs as follows: " Acknowledge yourselves with the Holy Apostle Paul to be in the Lord's hands as the pot is in the potiers, saying before you go in altogether on your knees devoutly the prayer appointed in the end of the book." (This is a special prayer composed by Jones. It commences by acknowledging that the diseased state of our body is due to our sins and wickedness.) He advises that anyone with a fever, anyone whose temperature is hot and dry, children springalles, young men lean, consumed, also women great with child must eschew the baths, and that all persons affected or grieved by a journey should rest a day or two before entering the baths.

Our author quotes " Agricola " as saying " that one should not take the baths in the pestilent season nor in the full of the moon according to Rolandus, nor in a leap year sayeth Savonarola, because it is the year of Saturn." But he will not agree with this last advice, as he says the leap year is simply means invented to make the year even, and cannot therefore have anything to do with Saturn. He advises taking the bath in the months of April, May, June, September and October, when the air is temperate, as being the best times. About an

hour after sunrise in the morning is the time to have a bath, and if the disease require it *drink the Water out of the Spring.* "So much of the Water as shall not be grievous to the stomach may be drunk." "Every person entering shall first emptie his bellie and make water and if so be he cannot do that every day yet every second or third day." He advises a bath morning and evening if the state of the body and strength shall require. He says, "The fat, strong, cold, moist and women do sustain longer tarriance in the bath, that is two hours in the morning and one and a half hours in the evening. In the Bath you should neither eat nor drink neither by the space of an hour after coming forth except necessitie contravening." He advises after coming out of the bath to cover yourself with clothes, go to bed, and sweat. Sleep after sweating, he says, is convenient, but avoid sleeping while in the bath. If you be weak or have the joint ache take exercise after dressing and use "fricacion of the outward parts." If fricacion (which here shall be rubbing with nettel clothes) shall not be made, we must use a suppositour of honie or of the root of white lettuce or lard or soap. He gives directions for the diet, saying it ought to be of light digestion and nourishment, not gross, not over cold, nor vehemently hot. He says bodies of birds and four-footed beasts are better nourishment than fish, and these both than fruits or herbes. He recommends that the meat and fish be boiled, not roasted nor fried, or powdered either with spices or salt. He forbids quails, pigeons, sparrows, or such hot, filling meats. Fruits, as almonds, raisins, prunes and quinces baked or any way dressed, shall not be permitted. He says, "If in the first day the bellie by the bath be shrunken together toward the backbone it is a good and wholesome sign. But if the wombe be puffed up or affected with ache or else onwhile it is hot and another while cold it is an evil sign." It is worthy of note that in Jones's book we find mention for the first time of drinking the waters, as this very subject gave rise to some heat in a discussion between Guidott and Pierce. Years after Jones's time Guidott claimed to be the first to recommend it, and Dr. Pierce pointed out that Jones ordered it more than a hundred years

before. But that practitioners were rather shy of ordering patients to drink the waters for long after Jones's time is obvious from a letter of Sir Thomas Browne to Dr. Pierce (written in 1677), in which he recommends one Mrs. Bridget Reave, of Suffolk, to his care, and proposed her drinking the Waters as well as bathing for a chlorosis cachexia, and in which he added these words "If my old friend Dr. Bave [another Bath physician] had taken more notice of my counsel the drinking of the Bath Waters might have been in use long ago: for above thirty years since I writ unto him to bring the drinking of them into use according to the custom of many other Baths beyond sea, which he very well knew, but would not hazard his credit in such a new attempt which notwithstanding had not been an innovation but rather a renovation, or renewing a former custom."

The list of doctors of the sixteenth century draws to a close with the name of Dr. Reuben Sherwood. Guidott says of him: "Of Dr. Reuben Sherwood, the first Physician I meet with any remembrance of, I can give no other account than that he died here Anno Domini 1598." Dr. Sherwood was born in Bath, and little is known of him except that he was the father of Dr. John Sherwood, who graduated in the University of Cambridge, and died in 1620, and was buried in the Abbey. The inscription on a brass against the wall over his grave is in Latin, but the translation as given by Guidott is—

"Here famous Dr. Sherwood lies,
Whose skill in Physick lore
Was great and his bright fame yet flies
Both now and evermore.

"Although within this tomb his bones
Are hidden out of sight
His soul not pent within these stones
To Heaven hath ta'en her flight."

He occupied Abbey House, where he received wealthy and illustrious patients until his death. Queen Anne during her visit to Bath stayed at Abbey House as Dr. John Sherwood's patient.

Dr. Thomas Elton was a contemporary of Dr. Sherwood, and was buried at Bath, August 11th, 1618. As Guidott says, "A well-bred gentleman, obliging and affable." He was a local man, and most probably educated *here*, as he does not seem to have graduated at either University.

I have now finished with the Bath physicians to the end of the sixteenth century, and I do not propose to proceed with my account any further. To refer to the many notable men of the seventeenth century would require an address to itself. As Dr. Parker in his Presidential Address in 1911 said, "It was a century of the greatest importance in the history of medicine on account of the brilliant development of natural science and medicine in England at that time." Besides, I fear I have already taxed your patience overmuch, and I will conclude with a quotation from one of the Bath writers of this seventeenth century, Dr. Pierce; and we may learn a lesson from these old worthies that a good name is more than wealth, and honest reputation better than great success, and that an amiable, upright member of his profession leaves a sweeter memory than a more learned mountebank. Pierce says, "But seeing that no calling is more disgraced than by the men of the same calling . . . I wish all Professors of Physick to carry themselves worthy of their calling, to be faithful and honest in their courses, not to insinuate with any after the manner of our Bath guides, presse upon them to be retained. If an Emperick or Mountebank seek about work, I blame them not, let them deceive those who will be deceived but for such as are graduated in the noble faculty of Physick to do so it is Fidler-like, a note if not some unworthinesse in them I am sure of a base mind. Let those therefore that are Physicians indeed strive to maintaine the reputation of their art and not by a base insinuating Carriage or Mountebanklike tricks to get a note and repute, vilifie their owne worth or disgrace so noble a faculty."

HYPERNEPHROMA OR MESOTHELIOMA OF THE KIDNEY.

BY

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THE so-called hypernephroma of the kidney is the most common of the renal neoplasms, but until recent years it was confused with carcinoma or sarcoma of that organ. According to Wilson,[1] 78 per cent. of all tumours of the kidney removed belong to this class of new growth.

In 1883 Grawitz[2] made the suggestion that these tumours were derived from adrenal "rests," and to them he gave the name of *strumæ lipomatodes aberratæ renis*, but in honour of this distinguished observer others have referred to them as Grawitzian tumours.

Grawitz based his conclusions on the origin of these growths from displaced adrenal tissue on the fact that the cells resemble those of the suprarenal gland, both in their arrangements in nests and columns and because they contain fat, which is not found in renal epithelium, but is frequently present in the cells of the suprarenal bodies. Moreover, the tumours are found beneath the kidney capsule, and are themselves encapsuled, as in the case of adrenal rests in other parts.

These fragments of adrenal tissue or adrenal rests are found elsewhere than in the kidney, such as in the liver, mesentery, testis, and along the course of the spermatic and ovarian vessels; and Glynn[3] raises the pertinent question as to why adrenal rests of the kidney should develop into tumours so frequently, when they rarely do so if situated in other parts of the body

[1] *Ann. Surg.*, 1913, lvii. 522.
[2] *Virchow's Arch. f. path. Anat.*, 1883, xciii. 39.
[3] *Quart. J. Med.*, 1912, v. 157.

where they are more common, and further points out the well known fact that renal tumours are never associated with abnormal sexual development, as is commonly the case with growths arising in the suprarenal capsules.

Many others besides Glynn have doubted the correctness of the explanation of these tumours suggested by Grawitz, which has been accepted without question until the past few years, and Wilson[1] considers the theory has been effectively contradicted by Stoerk[2] on the following grounds: "(1) The Grawitzian tumours most frequently develop at the lower pole of the kidney, where adrenal rests are not found; (2) the so-called fat of the cells of the Grawitzian tumours is usually not fat, but a vacuolation related to the contents of the cells; (3) the Grawitzian tumour is a tumour of the renal cortex and not of the renal capsule, in which adrenal rests are usually found; and that (4) though the Grawitzian tumours do frequently contain cordons, which, however, only remotely resemble those found in the suprarenal, yet they almost invariably contain tubules, the analogues of which are never seen either in the normal suprarenal or in the tumours of that gland."

After a careful consideration of the embryological development of the kidney, Wilson shows good reason for his hypothesis "that these tumours are mesotheliomas, or more definitely nephromas, that is that they are elaborated from masses of nephrogenic tissue which have never become connected with the renal pelvis, and which have never attained adult type in either form or function."

If, however, it is admitted that the pathogenesis of these tumours is involved in some obscurity, there can be no difference of opinion as to their clinical importance and their essentially malignant character, though they are less rapidly fatal than the sarcomatous form of malignant disease of the kidney, which is more common in infancy or early childhood.

The symptoms are not characteristic, but resemble those found in other forms of malignant renal neoplasms. At first

[1] *Loc. cit.*

[2] *Beitr. z. path. Anat. u. allg. Path.*, 1908, xliii. 393, quoted by Wilson.

there is frequency of micturition, soon followed by pain in the back of an aching character, and reflected along the ilio-inguinal and ilio-hypogastric nerves. Sudden and profuse hæmaturia is said to be a common symptom, though I have not found it so; and as the renal substance is gradually absorbed, rather than invaded, by the growth of the tumour, and the renal pelvis is not necessarily involved, there seems to be no reason for expecting hæmaturia to occur; but should it take place it would probably be accompanied by some renal colic, owing to the presence of blood-clot in the ureter, though the pain in the back frequently alternates with the occurrence of bleeding. In this last respect the symptoms differ from the hæmaturia and pain which occur in association with renal calculus. The urine presents no special features. A tumour is found presenting the characteristics of a renal swelling, and later on metastases occur; the general health of the patient begins to decline, and the usual cachexia of malignant disease ushers in the final stage.

The primary growth may occur at either pole of the kidney, and increasing gradually in size, infiltrates the surrounding structures, extends along the veins, and may even invade the vena cava.

The secondary deposits have a special tendency to involve the long bones, lungs and liver, and as in the case of the thyroid gland, these metastatic deposits may occur at a time when the primary focus is small and unsuspected, so that it is always desirable to consider the possibility of the existence of a mesothelioma of the kidney when confronted with malignant disease of one or other of the long bones.

A slight febrile disturbance sometimes occurs during the progress of the disease, and a varicocele may form as in other cases of malignant disease, involving the left renal vein or vena cava.

The rate of growth of the tumour is comparatively slow, and when examined after removal it is found to have an irregularly rounded outline with the remains of the kidney substance stretched over it. On section it shows yellowish

patches mixed with hemorrhagic areas, some of which show a tendency to cyst formation. Microscopically the cells are of a polymorphous epithelioid character arranged in nests or columns, but the supporting stroma runs between the individual cells. Histologically, therefore, the growth approaches the sarcomata in structure, in spite of the epithelial form of the parenchymatous cells.

The narration of the two following cases, which have recently been under my care, will serve to exemplify some of the foregoing statements :—

Case 1.—Mrs. G., æt. 51, after a few months of slight malaise, suddenly had a severe attack of abdominal pain and sickness, lasting about twenty-four hours, on February 25th, 1911. A month later a swelling was accidentally discovered on the left side of the abdomen ; there was some aching pain in the back and frequency of micturition. The tumour slowly increased in size ; there was no hæmaturia and no loss of flesh. She was well nourished and of a healthy appearance. The right kidney was unduly mobile, coming out completely from under the ribs. On the left side of the abdomen was a distinct prominence caused by a smooth, rounded, firm swelling, which filled the left flank behind and extended inwards as far as the mid-line. The swelling was almost entirely above the umbilical level, and the upper end passed under the costal margin. There was colonic resonance over the tumour, which came down freely on deep inspiration, and moved to the right of the mid-line when the patient was turned on her right side. A skiagram showed no sign of any calculus. The urine had a sp. gr. of 1020, was faintly acid ; urea, 2.3 per cent. ; no albumin or sugar ; a trace of indican, no casts, a few oxalate of lime crystals, no urates or uric acid, no red cells, and no bacteria of importance, 30 to 50 ounces per diem. On May 8th, 1911, I performed nephrectomy through the left semi-lunar line, the veins, which were tied before the kidney and tumour were removed, being an inch in diameter. The growth was about the size of a cocoanut, and occupied the upper pole of the kidney, the remains of the latter being about half the normal size, and situated at the lower end of the tumour. The tumour was more or less encapsuled, and on section was yellowish in some parts and dark red from breaking down hemorrhages in others. In less than a week the patient was passing 50 oz. of urine per diem, and made an uninterrupted recovery, gaining 13 lb. in weight before the end of the year.

In May, 1912—a year after the operation—there was no sign of recurrence, but she complained of occasional " lumbago "

pains; and in November, 1912, she wrote stating that she was "perfectly well." In the early part of this year (1913) she complained of some cough without expectoration, nausea, and occasional sickness, pain in the left side of the abdomen, but no "lumbago." On January 28th, 1913, I found no evidence of recurrence, but from this time her health began to decline, and she lost both flesh and strength. When I last saw her, on April 11th, 1913, there was a small, hard, fixed lump to be felt under the left costal margin, the liver was enlarged, but the spleen normal in size. She complained of a constant hacking cough and intercostal pain; the left lung was dull behind as high as the spine of the scapula, with diminished vocal resonance and fremitus, indicating a probable metastatic deposit in the lung and adjacent pleura.

On July 14th her medical attendant wrote: "The growth continues to spread and now reaches ensiform cartilage, but has not come much below the ribs; it seems to follow the diaphragm. Frequently her daily quantity of urine drops to about 12 ounces. She is then feverish and ill until it improves. Pain in chest is kept under by papine; morphia disagrees. When the right pleura is tapped it fills up again in about three days. I expect she will go on for some months longer. She is quite cheerful and well nourished, no wasting to notice. The liver has greatly increased in size, but there is little or no jaundice."

Case 2.—Mr. T., æt. 52, complained of aching pain in the right kidney region for about five months before I saw him. Though his appetite was poor, he did not think he had lost flesh. For some years he had been in the habit of getting up at night to pass water, and there was no increased frequency of micturition apart from this. During what he considered to be the duration of his present illness he had no hæmaturia, but he thinks he strained himself by lifting a heavy box two years previously, and this produced a painless hæmaturia for a week. His doctor found a large tumour in his abdomen, but the patient was unaware of its existence until then. He was distinctly anæmic in appearance, but fairly well nourished. Under the right costal margin and filling up the right loin was a large, firm tumour which reached downwards to one inch below the level of the umbilicus and inwards to one and half inches from the middle line. It moved downwards with respiration, had colonic resonance over it, and could be isolated from the liver above. There was a right-sided varicocele. An X-ray skiagram was negative. The urine was acid, sp. gr. 1022; some albumin, but no sugar, urates, blood or pus; urea 2.8 per cent. On examination, the blood showed 3,600,000 red corpuscles per c.m., hæmoglobin 50 per cent., colour index 0.68, leucocytes 16,250

per c.m., polymorphonuclears 74 per cent., large lymphocytes 17 per cent., small lymphocytes 7 per cent., eosinophiles 2 per cent.

On June 7th, 1912, I performed nephrectomy, tumour and kidney being removed through an incision in the right semilunar line. There was some rather sharp bleeding from the large veins of the pedicle, and the accompanying shock necessitated the injection of saline solution into the axilla. The tumour itself was about the size of a cocoanut and lobulated. On section the greater part was yellowish-white in colour, but there were some hemorrhagic patches. The kidney substance which remained was represented by a narrow area spread over the upper end of the tumour.

The patient made a good recovery, and went home about three weeks after operation. I heard no more of the patient until I wrote to his medical attendant, who informed me that the patient died in the October following operation " with secondary deposits in liver and abdomen."

There is no need to enlarge upon the details of these cases, as they are fairly typical of the disease ; but it is worth noting how insignificant the symptoms may be until a comparatively late stage of the disease is reached.

The early phenomena may last for a considerable time—in some cases for several years—and it emphasises the importance of examining the kidney by palpation in all circumstances in which symptoms, however slight, may point to the possible existence of disease of that organ.

When a tumour is found there is generally little difficulty in saying that it is of renal origin, for a swelling filling the loin behind, growing forward with colonic resonance over it, and movable with respiration is almost certain to be some form of enlargement of the kidney, and should there be an associated hæmaturia the diagnosis practically admits of no doubt.

With careful observation there is little difficulty in excluding hydronephrosis, pyonephrosis, or cystic disease from these solid tumours ; but the differential diagnosis of one form of solid tumour from another is largely conjectural. A rapidly-growing solid tumour of the kidney in an infant or young child is most probably a sarcoma ; a slowly-growing solid tumour in the adult is highly suggestive of a hypernephroma.

The presence of a calculus can be excluded by skiagraphy, but there are some rare benign solid tumours (adenoma, fibroma, lipoma, etc.) of the kidney which, theoretically, might lead to an erroneous diagnosis. These benign tumours, however, constitute only 6 per cent. of all renal neoplasms, and therefore it can practically be said that all solid tumours of the kidney may be regarded as malignant.[1]

When the diagnosis is established the only rational treatment is by operation, provided that the tumour is not fixed, that there are no signs of metastasis in the long bones or other parts, and that the other kidney is healthy. Kidney and tumour must be removed by nephrectomy, preferably by the usual lumbar route; but where the tumour is large, as in the cases referred to above, the abdominal route must be chosen.

Nephrectomy for malignant disease of the kidney is a serious undertaking, but there is no alternative method of treatment that holds out the same possibility of cure. Unfortunately, the insidious character of the disease under discussion frequently allows the mischief to reach an advanced condition before it becomes manifest, and the patient sooner or later succumbs to the dissemination of the disease after operation.

The degree of malignancy varies in different cases of hypernephroma of the kidney, but the knowledge that this tumour is less rapid in its growth and dissemination than other varieties of malignant renal neoplasms should encourage us to exercise great vigilance, in order that we may not be deceived by the comparatively slight symptoms which occur in the earlier stages of this serious affection; for by a more prompt recognition of the disease we may hope to perform the necessary operation with a greater chance of success, both early and remote.

[1] Keen's *System of Surgery*, 1908, iv. 244.

ON NEPHROPEXY.

BY

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MY object in this communication is a double one—to express appreciation of the operative technique in nephropexy recommended by William Billington, and at the same time to emphasize the fact that in the operation great caution has to be taken to avoid wounding the pleura. I also record a case in which this accident occurred in my practice.

It was in November, 1910, that I decided to try the method of Billington[1] for fixing a movable kidney. For several years previously, following Jonathan Hutchinson, jun., I had been fixing kidneys with kangaroo tendon sutures passed through the organ and through the muscular edges of the wound on each side. Earlier still I had practised the method of Edebohls, in which the renal capsule is deflected from both the anterior and posterior surfaces of the kidney half-way to the hilum, and the deflected portion of the capsule and the undeflected part near-by are transfixed with fixation or suspension sutures, the ends of which are carried through the muscles on each side of the wound. My reason for changing from Edebohl's method to Hutchinson's was the feeling that it was a mistake to decapsulate the kidney, because decapsulation seemed unnecessary, and perhaps caused some atrophy of the renal cortex. It appears to me to-day that partial or even complete decapsulation of the kidney is a procedure which leads to no appreciable evil results, and that it is the one procedure which most certainly secures firm adhesion between the kidney and surrounding structures. In this connection I may allude to the experiments on cats

[1] *Movable Kidney*, by William Billington, M.S., F.R.C.S. Cassell and Co. 1910.

made by Harold W. Wilson and C. M. Hinds Howell.[1] These writers, comparing the results of suturing without decapsulation and suturing after partial decapsulation, say, "We can confidently assert that that of decapsulation secures by far the more efficient fixation."

My reason for passing to Billington's method after using the others described was that by it the kidney is fixed at a normal level, whereas in the other two the kidney is fixed at a level considerably lower than normal.

Writers have alleged that no harm results from fixing the kidney in a lower position than normal, if the fixation holds good. Others have reported troubles which seemed to be due to the low position in which the organ had been fixed. One of my patients in whom I had fixed the kidney rather low, after an interval of six months of relief, began to complain of pain in the corresponding lumbar region of the abdomen, and she continued to complain for eighteen months or more. At last, in desperation, I determined to try and refix the kidney at a higher level. I found, however, that the kidney was so firmly adherent that it was impossible to improve its position, and I had to give up the attempt. I cannot be at all certain that this patient's pain was due to the low position of the kidney. She is a person never without pain somewhere. Before her kidney had been touched she had had a more or less normal appendix removed for pain simulating appendicitis.

The above is the only example I remember seeing of trouble due, or probably due, to fixation of the kidney in too low a position. Billington,[2] after quoting with approval Gœlet's statements that "fixation of the kidney lower than normal is worse than mobility," and that "this is what produces the great percentage of failures," states that he himself has several times had to operate upon kidneys previously fixed too low, and which were causing severe pain.

Anatomical considerations suggest that a fixation of the

[1] *Movable Kidney*, by Harold W. Wilson and C. M. Hinds Howell. London: Edward Arnold, 1908, p. 89.

[2] *Op. cit.*, p. 149.

kidney in a low position may result in kinking the ureter, and cases of hydronephrosis following renal fixation have been attributed to this state of affairs.

On the other hand, some writers have recommended fixing the kidney lower than usual to avoid the exertion of pressure upon it by the liver, specially during inspiration, which pressure tends to displace the organ again, or to flex its upper pole. Fixation of the kidney to the last rib has been particularly objected to, because the normal movement of the last rib is upwards with inspiration. The kidney should move slightly downwards with inspiration to avoid diaphragmatic pressure.

My first impressions on reading Billington's description of the operation he uses were that the method was condemned by its meddlesomeness and complexity. But I have found it easy to perform, and not so complicated as its description might lead one to suppose.

For anything like a complete description of the operation here labelled Billington's I must refer the reader to that surgeon's original writings. He lays no " claim to originality in connection with any particular step in the operation." Methods and principles suggested by Edebohls, Fullerton, Gœlet and Brödel have been combined in the operation, and the combination of methods adopted seems to have been first used by Jordan Lloyd.

Briefly outlined, the following are the steps of the operation : (1) Oblique incision, beginning over the eleventh intercostal space ; (2) separation of the fat and perinephric fascia " from the muscles of the back for some distance above and below the last rib " ; (3) dislocation of the kidney into the loin, and separation of all adhesions and fat ; (4) deflection of a flap of renal-capsule downwards from the upper half of the kidney, two-thirds of the flap being from the posterior surface, one-third from the anterior ; (5) insertion of two supporting sub-capsular sutures, after the manner of Gœlet and Brödel, into the lower half of the kidney, the ends of these being long to pass through the muscles and skin above the wound to be tied over gauze rolls ; (6) passing a curved Spencer Wells

forceps through the eleventh intercostal space at the edge of the erector spinæ muscle, so that the ends of the forceps curve round the last rib and project below into the upper part of the wound; and (7) passing the capsular flap, grasped in the forceps mentioned, over the last rib and suturing the portion drawn out down to the capsular surface of the kidney at the lower border of the rib.

Billington's assertion that, by the method of operating outlined above, the kidney can be fixed in a normal position is based upon investigations made by him in conjunction with Professor Arthur Robinson. He writes[1]: "Dissections of formalin-hardened bodies were made. It was found, with great constancy, that in the normally-placed kidney the angle formed by the last rib and the outer edge of the erector spinæ corresponds to a point on the posterior surface of the kidney midway between the upper and lower poles, and about half-way between the hilum and convex border." This middle point of the posterior surface of the movable kidney can be brought almost exactly to the other corresponding point, that is to the angle of the last rib and erector spinæ, by the operation described. The capsular flap in the operation, as pointed out above, is detached downwards only to the level of a line midway between the upper and lower poles of the kidney. In other words, the flap remains attached to the kidney by its base-line at this level, and the base-line is brought into contact with the last rib, covered by the diaphragm, when the flap is drawn taut over the rib. The kidney need not be placed so high. If the liver has a lower position than normal, and encroaches upon the space which is ordinarily filled by the upper pole of the kidney, it will be wiser to fix the kidney in a position a little lower to avoid downward pressure.

The most serious drawback of the Billington operation, to my mind, is the danger it entails of wounding the pleura when a channel is being made over and beneath the last rib. I have performed the operation ten times. On each occasion, when taking this step in the operation, I have been afraid that

[1] *Op. cit.*, p. 149.

I might hear that unpleasant hissing sound which is made when air enters the pleural cavity with inspiration through a wounded pleura. At the sixth operation I had the mortification of hearing that sound. I give further details and the subsequent history of the case below. Such an occurrence immediately suggests the question whether this step in the operation is worth taking or not. The uppermost suspensory Brödel suture brings the base-line of the flap and the kidney to the proper level, and retains them there for three weeks. Is not that sufficient? If not, the fixing power of the flap then comes into play, for the suspensory silk-gut sutures are removed. For the first three weeks I consider the capsular flap to be almost useless.

On the subject of the relations of the pleura to the seat of operation and the danger of wounding it Billington makes the following remarks:[1] "Usually the pleura does not extend below the lower border of the last rib, and for one and a half inches from the tip it terminates at or above the upper border. In some cases, however, the pleura extends lower." And again: "The only precautions necessary are to use a blunt instrument, to keep close to the rib, and to make the puncture not more than one and a half inches behind the tip. I have executed this manœuvre upwards of 350 times, and have only opened the pleura once."

Before my sixth operation the above statements gave me considerable confidence in my ability to avoid wounding the pleura, but since the accident hope has had to replace confidence. My hope for the future is the greater because the instrument I used for clearing a space around the rib was not sufficiently blunt. I was not in possession of a curved Spencer Wells forceps, the instrument recommended by Billington, so I used an aneurysm needle. It is quite likely I should have safe-guarded the pleura if I had used blunt forceps.

There are, however, facts which show that the pleura is liable to puncture in any operation for exposure of the kidney by the lumbar route if the deeper part of the incision at its

[1] *Op. cit.*, p. 3.

upper end is carried to or nearly to the lower border of the last rib, or to the rib which is supposed to be the last one. Thus in Jacobson and Rowlands's *Operative Surgery*,[1] a case is mentioned in which the accident occurred because the last rib was rudimentary, and the pleura came down well below the eleventh rib. The moral to be drawn from that case is that the ribs should be counted from above. Also Lange is quoted as having shown that in exceptional cases the pleura may descend considerably below a normally developed last rib. I have myself seen the pleura opened in exposing the kidney apparently because the pleura descended below the last rib.

The case I report below appears to me worth recording, not only as a warning of the danger under discussion, but also because it illustrates the possible effects of the accident. It will be noticed that dyspnœa gradually increased for two days, but was not noticeable for several hours after conclusion of the operation. These facts suggest that air continued to enter the pleura for many hours. How that could happen is difficult to understand. There was a drainage tube, a small one, in the lower part of the wound, but this was some inches below the last rib, and the kidney lay vertically between the tube and pleural wound, and of course there was a large dressing over the wound.

The following are notes of the case :—

Miss L., aged 23, had a very mobile right kidney, and suffered much from dyspeptic symptoms. A gastric ulcer had been suspected to exist. On October 31st, 1912, the kidney was exposed, brought out onto the loin and all adhesions separated. The capsule was deflected from the upper half of the kidney in the way described above. The last rib was then cleared at the border of the erector spinæ, an aneurysm needle being the instrument used for the purpose. As the needle end appeared in the upper part of the wound at the lower border of the last rib air began to enter the pleura. Mops were immediately applied to the spot to prevent further entry of air, and it was decided to cut away the capsular flap and trust entirely to the two supporting silkworm-gut sutures to retain the kidney in

[1] *The Operations of Surgery*, by W. H. A. Jacobson and R. P. Rowlands. Fifth Edition. Vol. ii. 172.

place. The lower half of the kidney was smeared with pure carbolic acid. As soon as the kidney was drawn up into position by the sutures all suction of air into the pleura seemed to cease. No effects from the air entry could be detected either by the anæsthetist or by me, and my impression was that very little air had entered the pleura. A small drainage tube was placed below the kidney, and the wound closed in layers. I saw the patient again six or seven hours after operation. She was in some pain, but appeared to have no respiratory trouble. At the end of twenty-four hours, on November 1st, she complained of some difficulty in breathing, and there were the physical signs of a pneumo-thorax over the front of the right chest, and the heart's apex beat was about an inch outside the nipple line on the left.

November 2nd (forty-eight hours after operation).—Difficulty in breathing more marked, respirations rapid, patient rather dusky in appearance, resonance on percussion from the right chest across the middle line to slightly beyond the left edge of the sternum in the cardiac region. The apex beat was still further displaced to the left.

An aspirator needle was therefore passed into the chest on the right side through the seventh intercostal space near the posterior axillary line, and connected with the vacuum made in a Winchester quart bottle. Air immediately passed into the bottle from the chest. At the same moment the patient began to have a series of short coughs, rapidly repeated, and she became more dusky and distressed. The vacuum was shut off, and after a pause of half a minute or a minute the cough ceased, and the communication with the bottle was re-established. More air came from the chest and more coughing occurred, but not so much as before. The vacuum was again shut off, and after a pause again connected with the chest, and then the needle withdrawn, as no more air seemed to be obtainable from the pleural cavity. The signs of pneumo-thorax could not now be elicited, and the apex beat had come back at least an inch nearer its normal position. The patient would not confess that her breathing was easier for another ten minutes. At that time there was no doubt possible but that she was considerably relieved of her respiratory distress. From this time onwards the course of convalescence was normal.

In conclusion, let me say that so far as I can judge on theoretical grounds, and as a result of a very limited practical experience, Billington's operation for movable kidney is a very good one, perhaps the best yet described.

MIXED INFECTIONS.

BY

I. WALKER HALL, M.D.,

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MIXED bacterial infections are responsible for many puzzling groups of symptoms. The difficulties of diagnosis are increased because at one time there is a summation of effects, and at another the secondary results are more or less overshadowed by the predominant organisms. To take the case of tuberculous infections: the exudative pneumonia which occurs is generally the result of a secondary invading pneumococcus; the exudates in tuberculous pleurisy are almost always pneumococcal at first, the pneumococcus dying out later and leaving the fluid sterile; the hectic fever is probably due to the action of other organisms.

A mixed infection, however, need not necessarily be purely bacterial. Protozoal lesions may be altered by the entrance of pyogenic cocci, and some of the filtrable viruses act in concert with schizomycetes.

The primary organisms may damage the skin or mucous membranes, and so provide an easy entrance for the secondary organisms, as in tuberculosis, typhoid, dysentery or variola; or the primary organisms may damage the general body resistance, and so favour the action and spread of secondary organisms. The frequency of pneumococcal infection in typhoid fever and erysipelas illustrates the latter type.

In the spread of the mixed lesions certain fairly definite changes may be expected. The associated organisms may remain localised, as in the case of tuberculous skin lesions infected later with staphylococci. Or both types of organisms may be generalised, as in combined tuberculous and streptococcal infections, typhoid and para-typhoid, etc. Or the

primary factor remains localised, and the secondary one becomes generalised. This occurs in the secondary infections of measles, scarlet fever and smallpox, in influenzal conditions with a secondary streptococcal manifestation in the exudates, in the streptococcal lesions occurring during diphtheria, etc. Or the primary agent may become generalised, and the secondary organism remain localised, the most familiar instance of a very long list being the localisation of the staphylococci and streptococci of a tuberculous cavity, while the tubercle bacillus extends into distant parts.

These features are easily demonstrable. Less apparent but equally important is the condition of sub-infection or sub-intoxication in relation to additional infection. The raids of bacteria present in the alimentary and genito-urinary cavities into the systemic spaces are not always unsuccessful. Now and again a few organisms remain undestroyed, manage to live at starvation rates upon the organic secretions, and constitute what has been termed " latent " bacterial action. They may, however, do more than this. Existing comfortably, without much propagation, they may bring about a condition of doubtful sub-infection, that is to say, a stage of invasion of the tissues which is neither a success nor a failure—a stalemate. On the other hand, the metabolic products of the bacteria, or the action of the bacteria upon protein materials, may depress gradually the nuclear activities of the whole body, and thus convert the doubtful local sub-infection into a definite one. In such a case the individual does not present any noteworthy symptoms. He may, however, fall an easy prey to some epidemic disease and receive the treatment for that disease, whereas he is really suffering from a mixed infection, and will not be cured entirely before both exciting agents have been dealt with.

A symbiosis of this kind calls for more than one method of attack. It is not simply a haphazard association of two or more different organisms situated in separate foci and acting individually. There is generally an interaction, and in some cases a combined action. The presence of staphylococci in a

tuberculous focus leads to an increased virulence on the part of the tubercle bacillus; the bacillus typhosus acts more intensely when it is associated with the streptococcus. When the bacillus coli and the streptococcus are present under conditions of a raised acidity the streptococcal influence is depressed, while a lowered acidity, or an alkalinity, allows the streptococcus to gain the upper hand.

It is obvious, therefore, that during the course of mixed infections the bacteria themselves undergo changes which may modify appreciably the ordinary progress towards recovery. Recent investigations have shown that parasites possess very real and efficient powers of adaptability and mutation. There appears to be a continuous adaptation on the part of the micro-organism to the resisting processes of the cell nuclei, as well as to any chemio-therapeutic substances artificially introduced into the tissues. The adaptability and mutative changes naturally become more complex when several interacting agents are concerned.

The diagnosis of mixed infections from the bacteriological standpoint is fraught with many pitfalls. In an apparently pure infection a second micro-organism, or virus, may be present. When two types of bacteria are isolated from pus or other material, it is important to determine their pathogenicity. When more than two organisms are present their relative dependence and altered virulence have to be considered. To this end it is not sufficient simply to demonstrate morphological or cultural characteristics. Their behaviour when placed in the tissue fluids of the host and their defence against the forces of phagocytosis call for investigation. In other words, the resistance of the host requires to be examined. Two cubic centimetres of the serum of the patient should be subjected to ordinary and absorption tests for the content of agglutinins, precipitins and, in some cases, opsonins; while, in addition, the identification of specific protective ferments by clinical methods and estimations of the combining powers of the antibodies by serological procedures may be indicated. Routine blood counts are also helpful.

The treatment of these infections is not always straightforward. There are but few bacteria which lay down their arms at the first sound of battle, or even fall victims to one kind of ammunition. Diphtheria and tetanus bacilli are made less harmful by the use of antitoxins, but they are not thereby rendered incapable of producing more toxin. In the former instance the simultaneous use of a bacterial emulsion or a solution of lipoid material may bring about the more rapid disappearance of the organism; in the latter, the future may reveal the necessity of supplementing the serum injections by a bacterial emulsion composed of the organisms which furnish the symbiotic conditions necessary for the propagation of the tetanus bacillus, with the view to the removal of the assisting organism, and a consequent inhibition of the growth of the tetanus rods.

In some cases it is best, perhaps, to aim at the removal of one organism alone, and to leave the other one to natural processes. The injection of artificial serum containing lysins, opsonins, antitoxins and antiferments constitutes one of the best of measures. Unfortunately, this can be used only for a short period, and for the tiding of the patient over difficult crises. The dangers associated with family and individual idiosyncrasies materially restrict its use. Recourse must be had to the injection of bacterial emulsions with the view to stimulate the tissues to a better defence. Of late, however, the *sensitised* emulsion, or vaccine, has taken its place as a better means of treatment. A sensitised emulsion combines the properties of the serum and the emulsion. The bacteria are treated with a corresponding artificial serum, and during their contact with the contained antibodies they become altered in such a way that upon subsequent injection they stimulate the body cells to form more suitable protective substances, as well as serve as the means of conveying the antibodies of the serum to the tissues. The sensitised emulsion has further advantages in that it is less irritating locally than the ordinary emulsion, and that much larger doses of the micro-organisms may be given. It has also valuable prophylactic properties, and merits a routine use

prior to operations and to childbirth. The sensitisation is generally carried out with horse or other animal sera, but now and then it has proved advantageous to use the patient's own serum or fluid exudates. In gonococcal, influenzal and similar infections such a method is almost imperative.

Another combination which the future may bring into vogue is the association of serum, or bacterial emulsion, with drug therapy. The action of pneumococcal serum is enhanced by the simultaneous use of quinine derivations, such as ethyl-hydrocuprein. Serums associated with cerebro-spinal conditions have proved more potent in connection with oleic and boric compounds. Anthrax anti-serum has been augmented by the administration of salvarsan. Tuberculin injections have proved more beneficial when given in connection with solutions of lecithin. Antityphoid measures have recently been supplemented by a combination of metallic solutions. Further experimentation is necessary before these methods obtain general application; but their mention is perhaps of value in order to emphasise the necessity of treating bacterial lesions by combined and not by unified treatment. The bacterium learns to defy the stock cartridge in a few generations, that is in a few hours, and can laugh accordingly at the ineffectual attacks of the subsequent "pin-pricks."

Whether the treatment is directed against an individual bacterium or against two or more at the same time, the most important factor in the result is the estimation of the extent of adaptation manifested by the infecting agent. Is the originally predominant organism still the chief offender, or has another one taken its place? Has the one or the other altered its characteristics in such a way as to render the emulsion, serum, sensitised vaccine or drug of little avail? These are questions which call for an answer in every case. At all events, when the treatments appear to fail, the method employed should not be regarded as ineffectual until an attempt has been made to provide the necessary reply.

In mixed infections also the factor of previous immunisation plays a part. Subsequent inoculations may show that the rate

and mode of reaction have been altered. The production of protective bodies may be more rapid and abundant, or they may not occur at all. On the other hand, there may be an increased susceptibility. The observation that when an immunity to bacillus coli is induced the injection of dead staphylococci will raise the agglutinating power of the serum for bacillus coli, illustrates the problem looked at from the standpoint of mixed action. Reactions like these appear to border upon anaphylactic phenomena. Little as we yet know of their biological significance, their recognition impresses upon us the futility of injecting unknown stock emulsions without due consideration of the factors already determined. Discredit, personal and general, will not be avoided unless the treatment of bacterial infections by anti-bacterial measures is undertaken with a fuller knowledge of the after-effects than is now deemed necessary.

A CASE OF CERVICAL RIB.

BY

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I. A., aged 12, came to the Royal United Hospital on March 10th, 1913, complaining that seven months previously she began to suffer severe pain of a shooting character in the region of the left shoulder. After a week or two the pain passed down into the left arm and fingers, where it remained until recently, though gradually diminishing. Shortly after the onset of pain it was noticed that her left hand was weak, and this has gradually got weaker and smaller since. The left hand and arm always feel cold, and sometimes the hand would go "dead," but no other unusual sensations, such as "pins and needles," have been noticed. She had not been laid up in bed, nor was there any history of injury. Shortly before admission pain was complained of in the right shoulder and down the front of the thighs.

Since the age of five she had been subject to diarrhœa, seldom getting through a summer without two or three attacks,

Photograph of left hand, showing wasting of thenar eminence and of the abductor muscles of the thumb.

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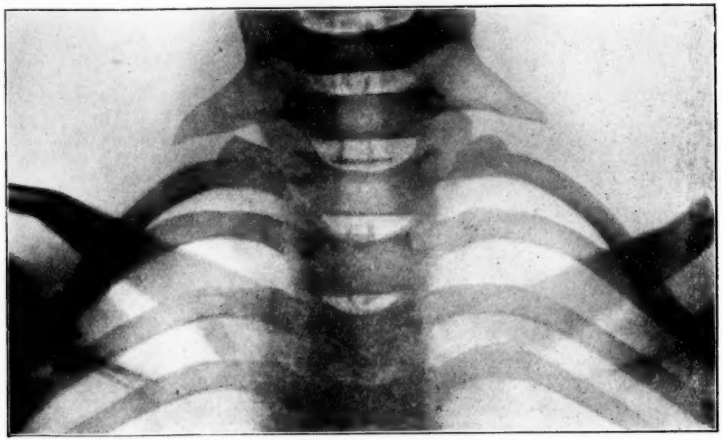


Skiagram of cervical region taken by Dr. Bowker, showing a rudimentary rib on either side.

and sometimes being under treatment two or three months at a time. Last January she had an attack of "catarrhal jaundice," followed by very intractable diarrhœa. There have been no other illnesses.

The child was bright and intelligent for her age, well formed, and except for slight pallor appeared well nourished. The left hand showed absence of the thenar eminence, with marked flattening of the hypothenar and some hollowness between the metacarpal bones. The fingers of the left hand could not be completely extended, but all other movements of the hand and arm could be performed, though less strongly than on the right. There was paresis of the serratus magnus on both sides, so that on horizontally extending the arms in front of the body the vertebral borders of both scapulæ stood out from the thorax.

The dynamometer showed the grip of the left hand to be 15, that of the right 32. The girth of the left arm at its middle was $\frac{3}{4}$ in. less than that of the right (R.=$7\frac{1}{2}$, L.=$6\frac{3}{4}$), and that of the forearm 2 in. below the olecranon $\frac{7}{8}$ in. less on the left (R.=$7\frac{5}{8}$, L.=$6\frac{3}{4}$).

The left hand and arm were distinctly colder to touch than the right, the surface temperature of the outside of the arm being 89.5 on the left and 93 deg. on the right, whilst, as will be seen from the accompanying chart, the temperature in the left axilla was constantly lower than that in the right.

The muscles of the arm and forearm reacted to faradism, but a stronger current was required on the left than on the right. None of the muscles of the left hand reacted, except the fourth dorsal interosseous, but they responded to galvanism, though a stronger current was required on the left than on the right.

Sensation to heat, cold, pin-prick, and wool appeared perfect all over the left arm and hand.

The pupils were equal and reacted briskly to light. The triceps and radial reflexes were not obtained, and the knee-jerks only with great difficulty. The plantar reflex consisted of plantiflexion of the toes on the left side, dorsiflexion of the ankle on the right. A skiagram, kindly taken by Dr. Bowker, showed a rudimentary rib on each side, but whether this was a cervical or a rudimentary first dorsal was not determined.

On March 27th these were removed by Mr. Lace through incisions parallel to the anterior borders of the trapezius muscles. In each case tense fibrous bands passed forwards from the tip of the rib.

Recovery from the operation was uneventful, except that for a time there was inability to raise the left hand quite as high as the right.

Six weeks after the operation both the child and her mother were satisfied that she had more use in the left hand and the

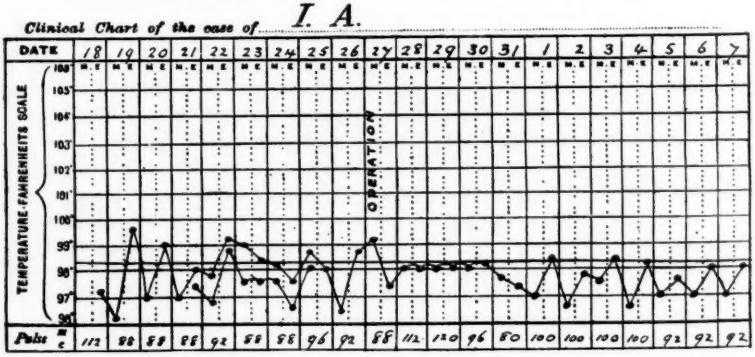
feeling of coldness had passed off, nor was the limb cooler to the touch than its fellow. Indeed, the temperature in the left axilla was distinctly higher than in the right (R.=98.2, L.=98.9). The power of the grip had not increased (R.=30, L.=15). The girth of the left arm at its middle was $\frac{1}{2}$ in. less than that of the right (R.=$7\frac{3}{4}$, L.=$7\frac{1}{4}$), and that of the forearm 2 in. below the olecranon $\frac{1}{4}$ in. less on the left (R.=$7\frac{7}{8}$, L.=$7\frac{5}{8}$).

There are several points of interest in this case. In the first place, paralysis of the posterior thoracic nerve, present in this case on both sides, appears to receive no mention in cases of cervical rib that have been recorded.

The differences in temperature of the two limbs was probably the result of pressure on the sympathetic fibres in the cords of the brachial plexus, causing a widespread vaso-constriction. This extensive vaso-constriction, apart from actual muscular wasting, probably plays no small share in causing diminution in size of the more affected limb.

With regard to the hand muscles, the wasting was altogether out of proportion to the loss of power, causing a resemblance to the state of affairs met with in progressive muscular atrophy.

The slight irregular pyrexia which preceded the operation is interesting, as seeming to indicate that actual inflammatory changes were taking place in the nerves of the brachial plexus as the result of pressure.



From March 21st to 25th is shown the temperature, taken at the same time, in the two axillæ, the upper being the right, the lower the left.

THREE CASES OF ATAXIA.

BY

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Case 1.—*Family History*—Father was a drunkard. Patient has two healthy sisters and one brother, whose history is given below.

Personal History—Enteric fever when in India. No history of syphilis. Drank much beer as a young man. Was in the army six years; then worked as a miner until seven years ago, when his legs began to get weak and his speech became affected. He had to give up his work. Arms were affected later. Vague pains in limbs and trunk (the latter said to resemble pleuritic pain) have occurred for last six months and his memory has failed.

Condition on Admission (January 2nd, 1909).—Patient's age is now 48. He is well nourished. No obvious wasting of muscles, which move fairly well against resistance. Gait is staggering and of the "cerebellar" type, but Romberg's sign is absent. There is slight spasticity in thigh muscles. Marked inco-ordination in arms. Speech slow, often louder than necessary, with elision of syllables and halting. No sensory disturbances. Knee-jerks brisk. Rectus clonus both sides. Ankle clonus absent. Plantar reflex—right foot flexor; left foot not obtained. Eyes—pupils equal, react to light and accommodation; no nystagmus, but patient cannot fix his eyes on any object for more than a few seconds; no optic atrophy or neuritis. Sphincters unaffected. Electrical reactions—Faradism, normal; galvanism, no R.D.

Patient has improved under treatment, namely rest in bed and liquor arsenicalis. His speech is not so slow and blurred, and he is steadier on his feet. He remained under observation for some months, but was subsequently lost sight of, and his present condition is unknown.

Case 2.—The patient's brother, age 41, gives the following history. Has always been healthy; no history of alcohol or syphilis; has never been out of England. Works as a miner. His wife has had four children, now alive, of whom one is "delicate," three have died in infancy of wasting. About ten

years ago some inco-ordination was noticed, and five or six years ago his strength failed, and he had to take lighter work. He is now engaged in looking after the wooden beams and rafters in the pit, which is the lightest job he can get underground. His speech has been affected for five or six years. Within the last six months he has had two attacks of pain and swelling in the knee-joint. No history of headache or vomiting.

Present Condition (January 24th, 1909).—The inco-ordination of the arms and head is well marked. The movements are distinctly choreiform in character, and there is much grimacing and twitching of the facial muscles when he speaks. Speech is thick and blurred with some elision of syllables and occasional halting; in fact, it closely resembles his brother's. Muscular power is very fair. There is no disturbance of sensation or no urinary or rectal trouble. The knee-jerks are brisk on both sides; no tendon jerks can be obtained in the arms; no rectus clonus; slight ankle clonus (two or three contractions) in right ankle, which is also a little stiff in movement. The feet are cold, but slight flexor plantar reflex can be obtained on right side. The pupils react to light and accommodation. Romberg's sign is absent, and there is but little ataxy in the gait. On the left arm there is a boil.

Case 3.—*Family History*—Father has had a stroke, and is paralysed on one side. Mother has had rheumatic fever several times. One sister has had "neuritis" in one arm. Four brothers and four sisters all alive and now well, but all suffer from rheumatic pains at times. There is no history of epilepsy, fits or other constitutional disease in the family.

Personal History—At the age of 19 patient had an attack of influenza, but otherwise she was strong and healthy until the onset of the present disease. Menstruation has always been regular and normal in character.

Present Illness—At the age of 22 she had an attack of "twitching" of legs and chattering of the teeth, which began suddenly and was accompanied by a feeling of illness and weakness. The attack lasted about twenty minutes, and was followed by several others during the course of the next month. Two years later she had a similar series of attacks of tremor, and with variations in frequency they have continued ever since. The patient has apparently been unable to get about or do any work during the whole time owing to inability to control her movements. The attacks of tremor are worse about the time of her periods, and are induced by over-fatigue, sudden noises, and shocks or excitement of any kind. She sleeps badly.

The patient came to the out-patient department at the Bristol Royal Infirmary in the spring of 1912, and was admitted

under my care. I have had her under observation ever since; and though she states that she is better than she was a year ago, I find little evidence of improvement or alteration in her condition.

Present Condition—The patient is a well-nourished young woman of 28. The abdominal and thoracic organs are normal; blood pressure, 130; urine, normal. Her muscles are not wasted, and there is no anæsthesia. She has well-marked ataxia of the lower extremities, and less marked ataxia of the arms. She writes with difficulty, and at times cannot dress herself. The gait is ataxic, and there is no marked difference in her power of maintaining equilibrium when her eyes are closed or open. There is no loss of muscular power, nystagmus, or ocular changes. The knee-jerks are exaggerated; the wrist and elbow jerks present; the superficial reflexes are normal. Plantar reflex is flexor. The pupils react to light and accommodation. Under the influence of excitement or exertion she has marked clonic contractions of the arms and legs of a choreiform character. Less violent attacks of tremor also occur. There is no tremor during sleep, and the attacks always diminish when she rests in bed. There is no difficulty in swallowing or disturbance of speech. For the last twelve months the patient has had some difficulty in controlling the action of the bowels and bladder, not quite amounting to incontinence. She has never had retention of urine.

The first two cases may be grouped under the familial ataxias, and most closely conform to those described by Sanger Brown in 1892. This class is distinguished from the ordinary type of Friedreich by the later onset of the symptoms, the exaggeration of the reflexes, the absence of nystagmus, scoliosis and club-foot, and by the frequent presence of optic atrophy. The cases here described differ from Sanger Brown's in the absence of optic atrophy and of drooping of the eyelids and the late age of onset. The second case showed arthropathies and boils, which are not typically present.

The third case, apart from the fact that no familial incidence could be proved, differed from the types of Friedreich and Sanger Brown in the absence of speech defects and difficulty of swallowing. There is also no change in the *fundi oculorum*, and there is some involvement of the bladder and rectum. Nor do the symptoms in the third case correspond at all to any of the forms of adult chorea; the patient's intelligence, for

instance, is normal. The group of myoclonias may also be excluded, as the defect is rather an ataxia than a clonus. Provisionally, a diagnosis of disseminated sclerosis seems the most possible, but the further development of the case will require watching in order to arrive at any degree of certainty.

INTERMITTENT SWELLING OF THE PAROTID GLANDS.

BY

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IN the *British Medical Journal* of August 10th, 1912 (p. 328), there is an interesting article on this subject.

Seven cases have been recorded by Goebel, Remouchamp, Kussmaul, Lange and Lüders. Only one patient was a woman; of the six men two had had syphilis, but although both received energetic anti-syphilitic treatment, the recurrent inflammation of the parotid glands continued.

In Kussmaul's case the periodical swelling was followed by escape of fibrinous plugs from Stenson's ducts, accompanied by a free flow of saliva.

In Remouchamp's case (a man of 85, who had suffered from this disease for fifty-nine years) chemical and microscopical examination of the saliva showed that it was alkaline, rich in mucin and ptyalin, and that it contained pus cells, large nucleated leucocytes, fragments of leucocytes, streptococci and short gram-staining rods, and a blood-count revealed a marked degree of leucocytosis. This appears to be the only case in which a bacteriological examination of the saliva has been made.

Lüders considers that the disease (in his two cases) was due to "chills," and the writer of the article thinks that "the above

cases were probably due to catarrh of the mucous membrane lining the ducts of the glands."

Drugs appear to have had little effect upon the swelling, and the treatment consisted chiefly of fomentations during an attack and subsequent massage of the glands.

In one case only (that of a woman aged 39) was there any abscess formation; this occurred seven years after the first attack, and the abscess was opened and drained.

In the following case iron, strychnine, quinine and belladonna were given at intervals for a considerable time, and during the attacks fomentations, ichthyol-glycerine and belladonna liniment were applied, but the results were disappointing. Massage was never employed, as the glands were always too tender, even when of normal size.

It is interesting to note that the patient had suffered for many years from chronic nasal catarrh with frequent exacerbations, and had had one or two severe attacks of acute bronchitis before the recurrent parotid inflammation commenced.

On October 24th, 1901, I saw Miss Mary G., aged 26, head mistress of a public elementary school. She was suffering from painful swelling of both parotid glands with salivation, "cold shivers" and general malaise. The temperature was 100° and the pulse-rate 88. I told the patient that she had an attack of "mumps," and inquired if there were any cases in her school. Her reply was rather surprising, and, at the time, unconvincing: "This is not infectious; I have had it several times before." And she said further that she had been treated for the same disease on several occasions by her former medical attendant, who eventually sent her to a laryngologist for treatment of the chronic nasal catarrh.

I was still incredulous, and insisted upon isolation, as there were two small children in the house. The swelling subsided in four or five days, as in an ordinary attack of mumps; there was no metastatic inflammation, and no other case occurred in the house.

The patient was not seen again until November 5th, 1907, an interval of more than six years, when she had a similar attack affecting both parotids, and she then told me that she had had several attacks in the interval, the swellings being sometimes unilateral, but usually both glands were affected, though it occasionally happened that, as in ordinary "mumps," the inflammation of one gland preceded that of the other by a few days.

Another attack occurred on March 31st, 1908, *i.e.* in less than five months, and there were recurrences in the following December and again on March 4th, 1909. On July 19th there was another recurrence, followed by an interval of eleven months. The next attack occurred on June 23rd, 1910; this was more severe and lasted for a week. The next attack occurred in seven months, *i.e.* January 23rd, 1911; and the last recurrence commenced in ten months on November 24th, 1911.

Miss G. informed me that she could not tell how many slight attacks occurred at intervals of a few months, and she only sent for me when the swelling was so severe and painful that she could not go to school; but I attended her in no less than nine attacks, each one reproducing the ordinary symptoms of uncomplicated "mumps." At no time was there any mastitis; menstruation has always been painless and quite regular; the teeth and digestive organs are quite healthy. Every attack was followed by lassitude, neuralgic pain in the face, and much tenderness of the parotid glands, persisting after all obvious swelling had subsided. During and after the attacks the patient was treated with iron, quinine, strychnine and belladonna, and on one or two occasions sodium salicylate was prescribed. Hot fomentations and belladonna liniment were used, and on several occasions ichthyol-glycerine was applied. The periodical recurrence, uninfluenced by ordinary treatment, suggested a chronic bacterial infection, and after discussing the case with Professor Walker Hall, I asked the patient to send for me when an attack was coming on. She came to see me on June 23rd, 1911, when an attack was at its height, the left gland being more swollen than the right. The buccal mucous membrane around the orifice of Stenson's duct on the left side was well washed with a 20 per cent. solution of hydrogen peroxide, and a small sterilised swab on a fine probe was introduced into the patulous orifice. Saliva was flowing freely at the time, and it proved to be quite sterile.

The patient was told to send earlier next time, and she did so on November 24th, 1911, when another attack was commencing. The same technique was carried out, and a swab was introduced into the left duct. On this occasion we were more successful. The culture yielded a pure growth of a gram-negative micrococcus, morphologically identical with micrococcus catarrhalis. Professor Walker Hall prepared a vaccine, and the patient received nineteen injections in increasing doses. She suffered from considerable malaise during the course of injections and complained of much "tingling pain" in the parotid glands.

She had a severe attack of acute bronchitis in April, 1912, but remained free from parotid inflammation for more than a year—a longer period than at any time during the last eleven

years. The after-history of the case, however, is very disappointing.

Miss G. went to Cheshire to spend her Christmas holidays, and whilst there had another attack, as severe as that in November, 1911. Dr. Robertson, of Dukinfield, suggested that it might be a form of rheumatism, and prescribed aspirin in 15-grain doses. "This," she wrote, "relieved the pain far more speedily than anything I had previously had," but naturally she was very depressed by the recurrence. The patient suffered from constant lassitude and depression, but had no further attack until March 11th, 1913, when both parotid glands suddenly swelled simultaneously and the inflammation persisted for eleven days; the temperature never rose above 102 deg., but there was great dysphagia, loss of appetite, and general malaise. Aspirin in 15-grain doses was given from the commencement of the attack, but after a few days it appeared to cause gastritis, so natural sodium salicylate in similar doses was prescribed; neither drug, however, appeared to give any relief. When the swellings subsided an intensely tender nodule as large as a hazel nut was felt over the posterior border of the right masseter; it appeared to be a retention-cyst. On May 9th it had contracted to the size of a large pea, and was still very tender.

This case has followed the course of the seven previously recorded, in that all treatment has been simply palliative, and nothing that has been tried has prevented frequent recurrences in every case. In regard to the vaccine treatment, the question arises, Did the vaccine confer a temporary passive immunity which protected the patient for a year, or was the absence of an attack during that period a mere coincidence? It will be remembered that the general experience of micrococcus catarrhalis vaccines suggests that the resultant period of immunity is comparatively short, and does not usually last for more than eighteen months or two years. The failure of the vaccine would have been less remarkable had the culture shown a mixed infection, as in Remouchamp's case, quoted above.

It may well be that these cases are not so rare as one might suppose, in view of the fact that this appears to be only the eighth recorded case, but it is probable that many more have escaped attention; and if anything can be done to relieve a very painful and distressing condition, it is necessary to collect as many cases as possible with details of their treatment.

THE ETHICAL ASPECTS OF PHYSICAL RESEARCH.

BY

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IT is by no means easy to make a satisfactory statement of the teaching of Christian ethics as regards our duty towards animals. In most moral questions we have the guidance of problems considered and worked out in many discussions in the past, but here the usual landmarks are wanting, and we are compelled to make new applications of general principles, a thing which always must be done with the utmost caution. The idea of duty towards what we commonly call the lower animals has only been seriously faced in quite modern times. Many writers, indeed, had laid down definite rules to guide our conduct towards domesticated animals, but these generally expressed a sense of duty towards their owners rather than towards the creatures themselves. In the case of Christian teachers, this omission of a sense of duty towards animals was partly based on the manner in which St. Paul interpreted the precept, "Thou shalt not muzzle the mouth of the ox that treadeth out the corn," on which he remarks, "Doth God take care for oxen? Or saith He it altogether for our sakes? For our sakes, no doubt, this is written: that he that ploweth should plow in hope" (1 Cor. ix. 9, 10), whilst scriptural passages in which our Lord spoke of even the sparrows as not forgotten before God were, rightly or wrongly, interpreted rather as bearing upon divine omniscience than upon interest in sparrows.

Nor can we regard this absence of what is now popularly termed "humanitarianism" as at all peculiar to Christianity. Throughout the ancient world we find such a feeling of duty towards animals only in two quarters: in the one where animals were regarded as divine or semi-divine beings, and on

this ground treated with superstitious dread and reverence; and in that other which accepted the theory of transmigration. These two exceptions are but apparently so, for in the one the sense of duty was towards the gods, in the other towards fellow-men, the animal form in both merely disguising the real persons. We know that after the collapse of the Persian Empire many Indian and Buddhist theories floated into Europe, chiefly by way of Alexandria, and it appears that such ideas of metempsychosis, which we know prevailed in Pythagorean circles, became known to the Church as one of the phases of gnostic thought, and thus were condemned. The theories of the pre-existence of souls which appear in the Alexandrian Father Origen have a distinctly Oriental tone. Possibly, then, this very dread of gnosticism helped to ward off the Christian thinker from all that seemed to raise animals to the category of persons.

It is perhaps hardly necessary for us to state explicitly that we are considering here only the sense of duty towards animals, and not merely the individual attachment which arises naturally from companionship, or the overflowing love of such an one as St. Francis, which included all God's creation in its embrace.

But at the base of all development of humanitarian feeling lies the fact that it is only the modern advance of psychological thought which has enabled us to regard the animals as sentient beings, and feel that in doing so we have the authority of scientific research.

We may now define the humanitarian theory as an ethical standard which extends the obligation to refrain from causing needless suffering beyond the limits of the human species to such animals as are capable of feeling pain, as we understand the term. Here we are, of course, faced by a very serious difficulty, for we do not know how far we can reasonably regard animals as reflecting our own psychic condition. We can discern many feelings like our own amongst the warm-blooded animals, and apparently an absence of such feelings, or at least a very marked difference, amongst those of the

more rudimentary types; but between these lies a large field, of which our knowledge is very imperfect, nor can we at present venture to draw any clear dividing-line between sentient and non-sentient animals. So far, then, as our own moral duties extend, we must limit the object of our duty to those animals which we reasonably believe to be sentient.

To define these duties more clearly we must premise that in Christian ethics some acts are wrong in the sense that they are definitely forbidden, as we believe, by an expression of the divine will, whilst others are right because commanded by the same authority, whilst a third and larger field contains a number of indeterminate acts which take their colour from the object for which they are performed. In no case is a definitely wrong act permitted for a remoter good, a theory distinctly repudiated by revelation (Romans iii. 8) and by reason, for the immediate object is always more certain than the remoter end in view. We may not steal in order to give the stolen food to a starving person, although the act of taking the food may be ethically justified by our own sincere belief that the food was actually ours, or that the owner consented, or the *bonafide* resolve on our part to compensate the owner for his loss.

Infliction of pain upon man or animal is in itself an act of indeterminate character, taking its colour entirely from the object in view. The surgeon operating on a patient and the murderer slaying his victim may conceivably perform the very same manual act and inflict the same pain, yet the two acts are clearly differentiated by the difference between the object which the operator has in view and that before the murderer. It may even happen that the patient dies, whilst the would-be murderer's victim recovers, yet neither the innocence of the surgeon nor the guilt of the criminal are thereby altered, for in moral theology the latter has the disposition and consequently the sin of murder upon him, even though his victim, contrary to his intention, recover.

Taking, then, the infliction of pain as indeterminate in itself,

and deriving its character from the object in view, we have four leading cases before us.

(1) Infliction of pain solely for the purpose of causing pain is obviously in itself evil. Such a desire to cause pain may arise in three chief instances: (*a*) Some persons, it is known, have an abnormal and morbid temperament which finds pleasure in the contemplation of pain. Action on their part merely for the purpose of enjoying the sight of suffering is evil in so far as it is indulged without effort to control, until such a point of mental alienation is reached that the will ceases to control, and so responsibility ceases. To diagnose this is a matter rather for the specialist in mental disease than for ethical inquiry. (*b*) Some have believed that the sight of pain is likely to produce courage and contempt of suffering. Such a theory was held to justify the Roman games, but to the Christian this offers no justification, for the immediate aim in view being to cause pain, this is not justified by a remoter and consequently uncertain object. (*c*) Some may desire to study the phenomena of pain and its expression, but here again the immediate wrong object cannot be excused by the remoter and uncertain aim. In all cases we may safely conclude where the desire is immediately to cause pain we find a definitely evil character.

(2) Contrariwise, where we have no ground or reason for believing that the subject can feel pain, either now or later, there appears no ground for assuming that there is wrong. If we reasonably believe that the subject is of so low an organisation as to be, like the vegetable, incapable of pain, or that it is dead, or so under the influence of an anæsthetic as to be beyond pain, even should it in fact happen that it can actually feel pain contrary to our belief, we are clear from ethical wrong, for it is obvious that there can be no intention to cause pain where we do not believe that pain will be felt.

(3) Where we inflict pain either now or when the animal recovers consciousness, not for the object of causing pain, but for some ulterior object, the act will obviously take its moral colour from that object. Thus the operating surgeon inflicts

pain on his patient for the object not of causing pain but of healing some physical defect ; and similarly where the operation is performed upon an aminal for its own good. The ultimate benefit is not certain, but commonly probable. Christian ethics excludes the theory of the rigorist school that no such act is permissible unless the benefit is certain, as it also excludes the lax view that every such act is permissible if there is the vaguest and remotest probability of success. The "probabilior" view that the chances in favour must be more than those adverse, though held by many, seems unsound, because the chances are not really calculable, and in practice this view results in an artificial scrupulosity which is the source of as much harm as good. The " probabilist " view that there need be only some reasonable ground for hoping success would seem the safer and better, in spite of the fact that this view has been fiercely attacked, and is commonly regarded with unmerited disfavour.

(4) Pain may be inflicted for a benefit expected to result, not for the immediate subject, but for the race at large ; it may be for the discovery of remedies which will benefit the human race or sentient animals in general. This is practically the position of vivisection, and here it must be remembered that such research has benefited the animal world as well as the human race. It is not due to the desire to cause pain, for the necessary results can be learned from the unconscious body, so be it that it is discharging those physical functions which do not occur in the dead subject, and thereby allows the operator to learn the effects of drugs, etc., upon the living organism. The only point here where we diverge at all from current humanitarian theory is that we hold it permissible to carry out such research upon the unconscious body of the non-human animal, but not upon the human body even though unconscious. We must remember that there are many forms of research which are possible only where the blood circulates and other corporal functions are at work. Either, then, possible remedies will not be employed with human subjects from lack of previous verification, or will be employed more or less

clandestinely by way of experiment. Popular theory tends to condemn research on the ground of our duty towards sentient animals, but we may justly correct this by distinguishing, as seems reasonable, a greater duty towards fellow-members of our own race, and a lesser, though definite, duty towards sentient creatures of the non-human animals. The Christian religion does not seem to authorise us to place men and animals upon precisely the same footing. Again let us repeat that we are not dealing with deliberate torture, which has been considered previously, but with research upon the presently unconscious body. Following our former line of thought, it would appear that the ethical character of the act depends upon whether the operator has before him, in all sincerity, a reasonable ground for hoping success, which will be the case when he puts into operation an experiment which he has already worked out in theory to a favourable conclusion, and which therefore he believes will succeed in practice. It is, of course, fairly open to those who oppose this view to bring forward arguments which tend to reduce the reasonable chance of beneficial result to an improbability, and if thus reduced it will obviously become a wrong.

(5) Again we may suppose the experiment performed not for research but for practice. Thus (*a*) the experimenter reproduces an operation whose conclusions are already well known. Such an experiment, we suppose, can be adequately studied in a text-book, and there is no need to repeat it, its repetition being due only to curiosity. This forms the real charge against vivisection, and there is no doubt that, at a former period, such needless experiments were made by amateurs. This we hold to be wrong, because there is no good end in view, and thus the act, indeterminate in itself, takes its bad colour from the resultant injury to the animal instead of a good colour from an increased knowledge which may benefit both animal and man. The common argument is that this is open to abuse, and thus society becomes responsible for the wrong arising from an act it permits. This is certainly an argument for confining such experiment to members of the

medical and veterinary professions, but there we must leave it. Beyond this we can only trust to the conscience and honour of the profession to use this confidence aright, the same conscience and honour on which we rely when we entrust ourselves to the operating surgeon. If we readily give this trust in the greater case, we cannot reasonably withhold it in the lesser. (*b*) Again, experiment may be performed in order that the operator may acquire the manual dexterity necessary for subsequent operations on the human body. It must be a question for the professional surgeon as to whether dexterity and reliability is thereby gained, but to the outsider it would appear that in default of such opportunity, an experiment in vivisection on the human body is performed by every surgeon in his first operation of any particular type.

ON HEMORRHAGIC DISEASES OF THE NEW-BORN, WITH REPORT OF A CASE DUE TO DUODENAL ULCER.

BY

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HEMORRHAGES occurring in new-born infants are grouped together under one title, "The Hemorrhagic Diseases of the New-Born." These have been subdivided into four classes, as follows :—[1]

1. Syphilis hemorrhagica neonatorum.
2. Morbus maculosus neonatorum.
3. Bleeding from ulcers of œsophagus, stomach or intestine.
4. Epidemic hæmoglobinuria (Winckel's disease).

To take the last first—epidemic hæmoglobinuria. This consists of jaundice, fever, gastro-intestinal symptoms, with albumin and methæmoglobin in the urine. This symptom-complex is not liable to confusion with other forms of the

hemorrhagic disease, but requires to be diagnosed from simple icterus neonatorum, in which there may be blood in the urine. This disease is probably not a separate entity, but merely one expression of the general disease, for *post-mortem* swelling of the spleen and punctiform hemorrhages in the internal organs have been found.

With regard to No. 1—syphilis hemorrhagica neonatorum—there would appear to be no reason for assigning a special class to these cases. They seem to be simply instances of an association in the same individual of the two diseases, syphilis and the hemorrhagic disease. There is no reason why a syphilitic child should be exempt from the disease, but rather the reverse, its degenerated condition rendering it more liable to the onset and continuance of hemorrhages ; but, on the other hand, in so few of the recorded cases of hemorrhagic disease, is there any evidence of syphilis in the parents or child, that the occurrence of this disease, in the absence of any definite luetic signs, is no reason for suspecting its subject to be syphilitic.

The position of the third class—that in which a definite lesion of the intestinal tract is found—is more uncertain. The details of the recorded cases are in many instances very meagre ; but since in one recorded *post-mortem* there were other lesions found—petechiæ on the cheek and small infarcts in the lung—it is likely that this class also belongs to the same general disease, and at any rate, inasmuch as the local condition is undiagnosable during life, so far as treatment is concerned it necessarily comes in with the others.

We come, then, to consider the hemorrhagic disease of the new-born as a whole.

The onset is within the first week. The main manifestations of the disease are—

Hemorrhages from mouth, nose, stomach, bowels, umbilicus, severally or in any combination.

Cutaneous and submucous petechiæ or extravasations.

Jaundice in some cases.

Rise of temperature in some cases.

The course is short. Many cases are fatal, death occurring

within a week, and being due either to anæmia from the losses of blood or to the child being brought to such a condition of weakness from these losses that it does not take its food, and dies from inanition, though no further bleeding may occur. If recovery takes place the bleedings gradually cease, and there is no liability to recurrence in later life.

Frequency.—Townsend [2] in 1891 reported 45 cases in a series of 6,700 deliveries. Shukowsky [3] in 1907 reported 29 cases in a series of 30,000 deliveries. Other writers give the frequency at about 1 in 1,000. One would suppose the difference is dependent on what cases the writers consider grave enough to merit inclusion.

Mortality.—Townsend in 1891 reported a mortality of 79 per cent. in 609 collected cases, and 78 per cent. in 32 of his own. In 1894 he reported a mortality of 62 per cent. in 50 cases of his own. Schöppler [4] gives the mortality as 56 per cent.

Pathological Anatomy.—On *post-mortem* examination various lesions are found. Amongst these are—

Extravasations of various size into subcutaneous or submucous tissues.[1, 5, 6, 7.]

Extravasations of various size into internal organs, *e.g.* liver, spleen, lungs.

Patches of extravasation in the mucous membrane of the intestine, with round-celled exudation, but without loss of substance. [4]

Hemorrhagic erosion of mucous membrane of stomach and intestine.

Rupture of a large vein in the stomach. [8]

Gastric ulcer. [9]

Duodenal ulcer.[1, 9, 10.]

Finally, in many cases nothing abnormal is discovered *post-mortem*.[1 6 10]

Cause.—Many suggestions have been made as to the cause of this condition, the most important being these :—

Difficult labour with mechanical injuries to the internal organs.

Syphilis.

Causes connected with the umbilical cord: (1) Infection. (2) Connected with ligature of the cord, *e.g.* embolism, or congestion in portal or hepatic circulation.

Hæmophilia.

Non-hæmophilic diminution in coagulability of the blood.

(i) The first of these suggested causes—mechanical injuries—cannot be the cause of prolonged generalised bleedings, and the number of cases in which it gives rise to hemorrhage at all is very small. In most recorded cases of hemorrhage of the new-born the labour has been perfectly natural and normal.

(ii) The association of syphilis with this disease has already been mentioned, and its infrequency as a cause of it pointed out.

(iii) Infection via the cord. Most infantile maladies have been put down to infection through the cord, and seeing how large the umbilical vessels are, and how directly they are connected with important organs, any infection of the clot in them is very potent for ill; but in the cases of this disease reported in detail a history of any septic condition of the cord is conspicuous by its absence, so that this cannot be a frequent cause.

Causes associated with ligature of the cord:—

(*a*) Embolism. The separation of emboli from the thrombus in the umbilical vein was thought by Lister[6] to explain the duodenal ulcer found in his case and the small infarcts of the lung. This cause could only be presumed to be present, however, in cases with definite local lesions, and these are relatively very few in number.

(*b*) Congestion in the portal circulation. According to Schöppler,[4] ligature of the cord causes acute hyperæmia of the stomach and intestine, and in conditions of defective resistance this hyperæmia, together with the further irritation induced by food, leads to inflammation and fatal hemorrhage. This, however, can only apply to cases with gastro-intestinal hemorrhage alone.

(iv) Hæmophilia. These cases, though they resemble hæmophilics in many ways, are not instances of that disease, for the following reasons :—

(*a*) The affection is purely a temporary phenomenon. If the patient's strength holds out and the amount of blood lost at any one time is not too great, the disease will come to an end, and this favourable termination occurs in about half the cases.

(*b*) Females are affected as often as males.

(*c*) There is no history of " bleeders " in most of the cases.

(*d*) In those cases which recover there is no tendency to recurrence of the bleeding.

(*e*) Hæmophilia is very rare within the first year of life. According to Larrabee, there are only thirty-seven cases in the literature.

(v) Diminution in the coagulbility of the blood. The actual evidence for this theory is very small in amount.

Schwartz and Ottenberg[11] found that the coagulation time in one case was delayed four days. Mosenthal,[5] in reporting a case cured by transfusion, considers the bleeding was due to diminished coagulability, though no observation on the coagulation time is recorded. Bigelow,[7] reporting three cases cured by injection of fresh serum, comes to the same conclusion, though again without experimental demonstration of the diminution, the cause in his opinion being lack of fibrin ferment.

A very great deal more investigation is needed before it can be said in which or in what combination of these conditions, if in any, lies the cause of these bleedings. If one may hazard a guess it seems likely that the diminution in the coagulability will prove to be the underlying cause ; but even if this be so, there must be some other exciting cause, possibly amongst those that have been mentioned, to start the bleeding in any one place.

Treatment.—This, as the death rate shows, is unsatisfactory, though there is reason for hope that newer methods may improve

matters. The disease is a self-limited one, that is to say, that the bleeding tends to stop of itself, but very many patients die in the meantime of loss of blood.

The greatest amount of success has been met with along one of two lines, viz. : (1) Direct transfusion of human blood ; (2) Subcutaneous injection of fresh rabbit's serum.

Treatment on these lines is based on the results of Weil's experiments. He showed that bleeding in hæmophilic conditions is due not to the presence of an anti-coagulation ferment, but to the absence or modification of certain substances normally present in the blood. If to some normal fresh blood some hæmophilic serum is added, no change in the coagulation time of the normal blood is produced ; but if to some fresh hæmophilic blood a small quantity of normal fresh serum is added, the coagulation time of the hæmophilic blood is brought down to normal. The inference was that the same thing might be brought about in the living body by the introduction of normal human blood directly into the circulation or by the subcutaneous injection of some fresh serum.

In the first method there is the additional advantage that good normal blood is poured into the patient's impoverished circulation, so that the child starts life afresh, as it were, with a new stock of normal blood. The drawback to the method is its difficulty, transfusion by means of a cannula having been found impossible, and end-to-end anastomosis of the radial artery of the donor with the femoral vein of the child must be resorted to.

At least six cases of this procedure are recorded, all within the last four years.[5, 11, 12, 13, 14] Of these three were successful cures and one improved for a time, the result in the other two not being clearly stated. In the four mentioned the improvement was sudden and striking, a child which was moribund at the commencement of the operation being at the end a strong, lusty infant. Bleedings diminished from the first and soon ceased. The one which relapsed was the case in which the coagulation time is known. Before operation it was delayed four days ; improvement was marked, and lasted some days.

Symptoms began then to reappear and the coagulation time also lengthened. Ultimately the child died.

In the second method—subcutaneous infusion of serum—5 c.c. of fresh rabbit's serum were introduced subcutaneously, and the results obtained were again most striking. Three cases are detailed by Bigelow [7] in his paper describing the treatment, and all three recovered, the bleeding rapidly ceasing after but one, or in one case two, injections of the serum.

Other subsidiary methods of treatment which have been tried or recommended are:—

Injection of gelatin [9] (15 c.c. of a 2 per cent. solution being boiled for six hours, then cooled to 100° F., and then injected. Holtschmidt reported recoveries in five consecutive cases treated by this method).

Internal administration of suprarenal gland.

Local application of adrenalin, where the bleeding spot is accessible.

In cases where the bleeding is from the intestinal tract, castor oil to relieve congestion and cold alum whey as a food if artificial feeding is being used, the feeds being small and frequent if the child is breast-fed.

With regard to duodenal ulcer in the new-born, a very complete account of the cases hitherto published is given in one of the chapters in the recent edition of Moynihan's book on *Duodenal Ulcer*. There are only sixteen cases recorded in which death occurred within a week of birth, and only six more with a fatal termination within the first two months. The most generally-accepted theory as to the causation is that of thrombosis of the umbilical vein with scattering of portions of the thrombus into the general circulation and infarction of the duodenum, digestion of the infarct producing the ulcer.

Another case, not included in Moynihan's list, very similar to the one reported below, is described by Fabre and Rhenter in the *Bulletin de la Société d'Obstétrique de Paris* for 1912.

The history of the present case is as follows: The child, a female, an eight months' child, was born on November 8th, 1911. It was well-nourished and cried strongly, but was obviously

premature, the skin being red and still covered with lanugo, and the nails not reaching to the ends of the fingers. On the second day of its life a curious stool was noticed, but it was not reported. On the third day three stools were passed, and all of these contained blood. The first contained a considerable quantity of bright red blood, the second a small quantity of bright red blood, and the third was entirely composed of tarry material. On the fourth day three more black tarry stools were passed, and in the evening an injection of 5 c.c. of serum was given. Normal serum was not obtainable, so diphtheria antitoxin was used instead. In spite of the bleeding, the child was still looking fairly well, cried strongly, and took the breast well. On the fifth day another black motion having been passed in the night, a second similar injection of the same serum was given. Two more black stools were passed that day and two more early on the sixth day, but the third on the sixth day was nearly normal—yellow with just a little dark material in it. The child was now failing very badly. It was too weak to suck. The milk was withdrawn from the breast by the pump and the child spoon-fed with it, a few drops of brandy being added to each feed. On the seventh day two normal stools were passed, and there was no bleeding. The breast milk had given out, and the child was being fed with a few drops of modified milk every hour with two drops of brandy in each feed. It was very weak. On the eighth day the motions were again normal, but the child was getting progressively weaker. On the ninth day it vomited about half an ounce of blood and passed a very large black stool, and died a few hours later, not, however, in a blanched condition.

Thus in the nine days of its life the child passed twelve blood-containing stools and vomited blood once. There was no hemorrhage from any other source. The cord was quite normal and healthy.

With regard to its antenatal history, the mother was a primipara, healthy, and there was no reason to suspect syphilis in the father. The labour was natural and easy, the cord being tied at the usual time, viz. as soon as the pulsation had ceased.

A partial *post-mortem* was all that the circumstances permitted, which is much to be regretted. This consisted in removal of the stomach and intestines for later more careful examination, and inspection of the rest of the abdominal organs. The abdominal cavity was normal ; the stomach was distended ; the appearance of the intestines normal. On examining the interior of the alimentary tract a few congested patches were found in the stomach and small intestine, and in the first part of the duodenum, half an inch from the pylorus, a small ulcer was discovered. This was elliptical in shape, with its long axis in the long axis of the gut, and measured 5 mm. by 3 mm. It had

a slightly raised edge which shelved away to normal mucous membrane all round, and towards the base internally. The ulcer was shallow, but on holding it up to the light its base was semi-transparent, and apparently consisted only of peritoneum. The peritoneal coat was normal. The small intestine contained a good deal of red turbid fluid, like thin anchovy sauce, but no other lesion than this was found in it nor in the large bowel. The other abdominal organs were apparently normal.

REFERENCES.

[1] Osler, *Principles and Practice of Medicine*, 1910, p. 755.
[2] Townsend, *Boston M. and S. J.*, 1891, cxxv. 218.
[3] Shukowsky, *Arch. f. Kinderh.*, 1907, xlv. 321.
[4] Schöppler, *Centralbl. f. allg. Path.*, 1910.
[5] Mosenthal, *J. Am. M. Ass.*, 1910, liv. 1613.
[6] Lister, *Tr. Path. Soc. Lond.*, 1899, l. 111.
[7] Bigelow, *J. Am. M. Ass.*, 1910, lv. 400.
[8] Soltau Fenwick, *Disorders of Digestion in Infancy and Childhood*, 1897, p. 312.
[9] Goodhart and Still, *Diseases of Children*, 1905.
[10] Moynihan, *Duodenal Ulcer*, 1912.
[11] Schwartz and Ottenberg, *Am. J. M. Sc.*, 1910, cxl. 17.
[12] Lambert, *Med. Rec.*, 1908, lxxiii. 885.
[13] Swain, Jackson, Murphy, *Boston M. and S. J.*, 1909, clxi. 407.
[14] Lespinasse and Fisher, *Surg., Gynec. and Obst.*, 1911, xii. 40.

Progress of the Medical Sciences.

MEDICINE.

The old questions as to the importance of abnormally **high blood pressures** and as to whether they are compensatory, or part of a vicious circle, or merely a by-product of disease, have been of late the subject of many dogmatic statements as well as of some important researches. T. Janeway[1] has reviewed in detail the abundant work done of late on hypertension in kidney disease, and has to confess that neither epinephrin nor anything else has been shown to be the definite agent. His own view is clearly in favour of the old theory of arterio-capillary fibrosis preceding actual kidney disease. In another paper[2] he attacks the question by a fresh method, and tabulates the causes of death in 100 cases of high pressure, *i.e.* of 170 mm.

[1] *Am. J. M. Sc.*, 1913, cxlv. 1. [2] *J. Am. M. Ass.*, 1912, lix, 2106.

and upwards. Among his 100 patients 79 had been diagnosed as suffering from some form of nephritis, 7 from the diabetes of elderly people, 9 from heart affections, and 5 from arterio-sclerosis or from simple high pressure. Now, death occurred in 35 from uræmia, and from some form of circulatory trouble in 50, that is to say in 29 from cardiac failure, in 3 from angina, in 14 from cerebral apoplexy, and in 4 from acute œdema of the lungs, while in 13 instances the cause of death was unknown or unconnected with the history. Thus uræmia accounted for only a comparatively small group, one-third of the whole, and in them Janeway notes that the most frequent symptoms had been polyuria, headaches, and disturbances of vision. On the other hand, some breakdown in the heart or vessels took place in a rather larger group equal to half the whole number. Here the earliest prominent symptoms had been dyspnœa on exertion. The actual deaths from angina were very few. Those from cerebral hemorrhage were only one-seventh of the whole, but we do not learn how many patients were crippled by non-fatal hemorrhagic hemiplegia. In any case, the total of these hemorrhages must have been large and the danger a real one. It may be argued from these figures that (1) where the compensatory pressure was insufficient death took place from uræmia, *i.e.* in a third of the cases; (2) where the pressure was sufficient death occurred from failure of the heart or vessels, *i.e.* in at least half of the cases. However, the theory of compensatory high pressure is a doubtful one. Again, considering the large number of patients originally diagnosed as nephritics, the question arises whether in many of them the nephritis was not altogether secondary to arterio-sclerosis. Osler thinks that it is not difficult to distinguish primary nephritis from primary sclerosis, but probably mistakes are often made about it. It is much to be wished that others would continue Janeway's work, and investigate the end of some thousands of these cases, so that more reliable indications for treatment might be obtained.

C. H. Lawrence,[1] at the Massachusetts General Hospital, has carried out most elaborate investigations to settle the question whether increased blood pressure does or does not cause an increased secretion of urine. In reporting them, he points out that while it is asserted that high blood pressures are protective, it is a curious fact that most of the ordinary drugs found useful in nephritis are vaso-depressants; and again, that Senator and others have fully proved in animals (1) that high blood pressure is not produced by any obliteration of or artificially increased resistance in the kidney vessels, (2) nor does it increase the supply of blood to the kidney, (3) nor the urine excreted. Since a certain amount of clinical evidence

[1] *Am. J. M. Sc.*, 1912, cxliv. 330.

opposed to this had been brought forward with respect to human beings, Lawrence obtained 20 patients who had each a systolic pressure over 180, and by constant and detailed investigations under minute precautions against error obtained 627 observations on changes in blood pressure which coincided with changes in the amount of urine. These and subsequent tests showed that—

(1) There is no clear connection between changes in the systolic or in the diastolic pressure and the amount of urine excreted.

(2) An increase does indeed occur when the " pulse pressure " increases with a falling systolic pressure.

(3) There is also an increase when the administration of a nitrite increases the output of blood from the heart.

Thus high pressure is not protective, for it has little or no influence on the blood supply of the kidney or on the excretion of urine. However, the amount of blood passing through the kidney in a unit of time is important.

In connection with these results, it is curious to note the remarkable evidence recently brought forward as to the action of digitalis by F. W. Price, J. Burnett and others. Digitalis has long been credited with a diuretic action and with causing a rise in blood pressure. Thus it has often been withheld where a rise of pressure would be dangerous. However much a heart stood in need of digitalis, it seemed almost criminal to give it if the peripheral pressure was very high. Price,[1] however, conducted a series of most carefully-guarded observations upon a number of patients, and only once in 21 cases was there any rise of pressure, whilst in many of them there was an actual fall. Burnett[2] got similar results in 25 cases, including both healthy and diseased persons, and we may add that the doses employed in the experiments varied from 45 to 90 minims of the tincture daily. Thus there is strong direct evidence that in man digitalis does not raise pressure by constriction of the vessels. Josué and Godlewsky also report to the Société Médicale des Hôpitaux that they find digitalis does not raise the pressure either in patients with a normal tension or in arterio-sclerotics whose tension is already high, though they hold that it may do so in hypotension with cardiac insufficiency.

Herbert French[3] argues that we need not imagine various retained toxins causing peripheral constriction. When the muscular coats of, say, the gastric or splanchnic area are kept permanently dilated they become fibrotic, just as the muscles of an arm which is kept fixed in one position for a long period. These sclerosed vessels cannot contract or dilate, and if an increased blood supply is required for any area it can only be

[1] *Brit. M. J.*, 1912, ii. 689.

[2] *Med. Press and Circ.*, 1912, cxlv. 182. [3] *Lancet*, 1912, ii. 850.

obtained by forcing the blood into all vessels at a higher pressure. Here, again, we have the compensatory theory postulated, whereas the existence of fibrosis is sufficient cause for the rise of pressure if the heart remains vigorous.

Radium Emanation.—Certain definite facts as to the physiology and effects of treatment by Radium Emanation or Niton have been gradually made clear, whereas a year or two ago much discredit on its use was brought about by the unwarranted claims put forward, by the uncertainty as to dosage, and by the absurdly weak emanations employed. Even Gudzent's experiments on gout and his statements as to the effect of the Emanation on the excretion of uric acid were contradicted; but a worker in Madame Curie's laboratory has confirmed his results, and has shown that the Emanation does change the insoluble urates into more soluble ones, greatly increases the excretion of purin bodies and of endogenous and exogenous uric acid. No one now denies certain effects of the X-rays, such as their influence in skin diseases and on the blood cells, or the dangers of their use; so, too, the laboratory tests of the action of the Emanation and of Thorium X give definite physical results. Thus there is evidence of their action on pepsin, pancreatin, and the autolytic ferments, on phagocytosis, on yeast and lactic acid fermentations, on coagulation of the blood, and on the life of certain bacteria (Engelman,[1] Van der Velde, and others). Bellingham Smith[2] shows that elimination of the Emanation takes place chiefly through the lungs, and is complete in about four hours, in small mammals, prior to which it causes general radio-activity throughout the body. Bodies which affect metabolism so markedly should clearly not be used without discrimination, and Carl von Noorden, who by the help of the Austrian Government employs in his clinic radio-active water to the value of £8,000 or £10,000 a year, lays down that they must not be used (1) where there is a tendency to any kind of hemorrhage, (2) in severe forms of diabetes, Graves' disease, and in advanced blood disorders, (3) in febrile complaints, or (4) in marked cardiac weakness.[3]

Indeed, Thorium X, which produces most striking improvement in blood diseases, and has the advantage of being cheap and easily measured, has already caused a fatal accident to a patient with some hemorrhagic affection at Berlin. Among clinical results von Noorden notices (1) the increase of respiratory metabolism by 27 per cent., and also of carbohydrate metabolism, which was confirmed by Kikkoji and Bernstein; (2) a great increase both of red and white blood cells, except in diseases where the power of regeneration was exhausted, or where the dose of Emanation was too great, in which case a

[1] *Med. Rec.*, 1913, lxxxiii. 95.

[2] *Quart. J. Med.*, 1912, v. 249. [3] *Med. Rec., loc. cit.*

diminution took place; (3) the increase of purin metabolism, so that the excretion of uric acid was sometimes actually doubled, while the pain, the swelling of joints, and neuralgias in chronic gout were notably relieved (Gudzent treated 400 cases of gout, rheumatism, and arthritis deformans with much success); (4) remarkable removal of pain and swelling, together with increased mobility in arthritis deformans and sub-acute rheumatism when full doses were used (acute rheumatism and spondylitis are probably unaffected; some observers had great success with gonorrheal rheumatism, and others failed); (5) very good results in the treatment of insomnia, nervous excitability, and in some forms of gastric irritation, vomiting and hiccough; (6) reduction of abnormally high blood pressure under the use of Thorium, but the action of the Emanation was here very uncertain. Von Noorden usually combines strongly radio-active baths with inhalations and draughts of the water.

Pagan Lowe raises the question whether artificially-made water is as efficient as the natural springs with their saline constituents.[1] Some of the clinical reactions are certainly given by the former, but whether the results are so satisfactory is an open question. However, the effects of the Buxton water, where the radio-active springs contain hardly any salines, compare well with those of other places. Armstrong claims that these waters give excellent results in gout, rheumatism, dyspepsia, and abnormally high blood pressure; for the latter he has employed with much success radio-oxygen baths. In Germany the most powerful waters are those of Gastein, Landeck, Baden-Baden, Kreuznach, Nauheim, and above all Joachimsthal, which is four times the strength of any other. In France the most active spring is Plombières. The waters here used in the celebrated Plombières douche have been most useful in mucous colitis and other disorders.

Fibrositis.—The gradual separation of the different diseases once comprehended under the term rheumatism have hardly yet been completed, and the name itself only seems to date from the work of Ballonius in the first half of the seventeenth century. Then Sydenham quickly distinguished between gout and rheumatism; and from about 1760 many writers under the teaching of Heberden have separated arthritis deformans from rheumatism. As early as 1816 Balfour described a fourth form, viz. muscular rheumatism. To this Gowers gave the name of fibrositis, and Stockman made clear for us its pathology. Although a monograph was written on the subject by as early as 1856, it is astonishing how scanty its literature is in this country compared to that in Sweden and Germany.

In a recent discussion[2] Llewellyn pointed out that the

[1] *Proc. Roy. Soc. Med.* 1912, v. *Baln. Sect.* 29.

[2] *Ibid.*, 1913, vi. *Baln. Sect.* 27.

essential lesions consist in an inflammatory hyperplasia and exudation in the white fibrous tissue in various parts of the body; for example, in the sheaths and attachments of muscles, in the investment of joints and bursæ and of nerve trunks. In this tissue Stockman has found new blood vessels affected with endarteritis, but whether the condition is due to the absorption of toxins or to an invasion of one or various microbes is unknown. Frequently a direct injury or exposure to cold is the immediate precursor. In muscles the spindles or sensory organs of Ruffini and Golgi are compressed by this new tissue and become hypersensitive. Besides the excruciating pains on movement during the acute stage, the tonus of the affected muscles is magnified by the excessive impulses sent up constantly from these organs, and this irritable hypertonic state lasts even after the pain, heat and swelling of the acute stage have gone away.

In the chronic types the new tissue forms nodules in the muscles or around their attachments, which with a little care can be detected through the skin. They may feel like small beads, cords, or flat plates, or rounded masses, varying much in size and hardness. In the numerous cases of brachial neuritis, so common in recent years, nothing is more striking than the number of tender points which can be found on deep pressure. There will be one over the insertion of the deltoid, one over the capsule of the joint, or, as Luff[1] suggests, over the subacromial bursa, perhaps one in the substance of the pectoralis major, and two or three over the edges of the scapula. The patient may be quite unaware of them until they are touched. The condition may spread to the neighbouring nerves or set up a neuritis in them. In the abdominal wall fibrositis is not rarely mistaken for appendicitis, biliary or renal colic, or gastric ulcer, but in these the tenderness is more marked when the muscles are relaxed, whereas, as George A. Murray[2] points out, in fibrositis there is hardly any tenderness or pain until the muscle is contracted. Often, too, a localised swelling or node can be felt, perhaps along the edge of the rectus or at its attachment to the costal cartilages. In lumbago and stiff neck similar infiltrations and nodes can be felt, and tender points when the muscles are contracted. In some cases of sciatica the nodes can be found near or along the nerve trunk. Maxwell Telling[3] lays down that many intractable headaches put down to myopia or some other refuge of the destitute are due to fibrositis in the temporal and retrocollic fascia. Luff finds this frequently in motorists. Dupuytren's contraction, tennis elbow, pains in the joints and loins after a public dinner and the absorption of various toxins and bad wines, and the rare

[1] *Brit. M. J.*, 1913, i. 757.

[2] *Clin. J.*, 1910, xxxvi. 49. [3] *Lancet*, 1913, i. 154.

adiposis dolorosa, are according to Luff also instances of fibrositis.

In some of these forms the constant wearing pain and the violent exacerbations at times reduce the patient to a miserable state of depression as well as of incapacity for work. Treatment is often difficult. For the relief of pain aspirin either alone or with pyramidon, ammon. chloride in 20 grain doses, or phenacetin and gelsemium are often useful, but to prevent a return a full course of potassium iodide or of guaiacum resin is desirable. For local applications relief is obtained by salicylic acid and menthol in lanoline, or chloral menthol and camphor, or (Luff) a fomentation applied over tincture of iodine painted on the skin, or hot sand bags, or radiant heat followed at once by ionisation with lithium iodide. Ordinary general massage is useless, but a masseur is invaluable who knows how to pick out the nodes and tender spots, and while exceedingly gentle at first, especially with inflamed joints, bursæ and nerve sheaths, gradually removes the indurations. As long as the fibrous thickening remains a strain or chill is apt to bring on a relapse.

G. PARKER.

SURGERY.

Tetanus.—In spite of the discouraging results of treatment in this disease, efforts are being made in a variety of directions to advance our knowledge and improve our methods of dealing with it.

Pathology.—It is well recognised now that the toxin of tetanus reaches the central nervous system by way of the nerves, not by the blood-stream. Interesting confirmation of this is afforded by the phenomenon of the so-called "cephalic type." Wounds of the seventh nerve area which give rise to tetanus are accompanied by facial paralysis from strangulation of the swollen nerve in the aqueduct of Fallopius.

The causation of post-operative tetanus has been the subject of an interesting paper by Richardson,[1] who concludes that it arises in particular districts, especially in Northumberland, and under circumstances where the catgut and other surgical appliances could not possibly have been the agents conveying the infection. He believes that the symptoms are not due to tetanus bacilli, but to an intestinal infection with a similar organism which causes the "louping ill" in sheep, and which lies latent until it is brought into activity by the general upset of the operation. Such a theory must be very solacing to the unfortunate surgeon, but the explanation will not, of course, cover cases in which there are several successive cases.

[1] Richardson, *Brit. M. J.*, 1909, i. 948.

In the tropics, where intramuscular injections of quinine are often given for malaria, it has often been observed that tetanus has followed, in spite of great care in boiling the needle and solution. Investigation shows that a few tetanus bacilli may lurk harmlessly in an aseptic wound in an animal, which when an injection of quinine is given, even in a remote region, light up the disease in an active or even fatal form. Probably in the human cases after quinine there were already a few quiescent tetanus bacilli which had entered some forgotton abrasion, and which in some mysterious way were now activated. It is suggested here also that the bowel may be the lurking place, and in the tropics bacilli like tetanus often occur in the stools.[1]

Prevention of Tetanus.—Although a thorough cleansing of the earth-infected wound when first seen probably helps to reduce the danger, yet it is very far from being a perfect protection. In several cases at the Bristol Royal Infirmary the wound was efficiently dealt with only a few hours after infliction, and nevertheless tetanus supervened. In America, therefore, doses of anti-tetanic serum are given to patients with an earth-infected wound as a routine, and several long series are reported in which no tetanus ever developed, but it is difficult to say that any of them would have manifested the disease apart from the prophylactic treatment. On the other hand, Jacobson and Pease[2] mention nineteen cases in the literature (to which we can add another) in which tetanus came on in spite of the serum having been given. The great majority of them recovered, and the incubation period was prolonged. Probably, therefore, there is real benefit. In experimental animals anti-tetanic serum is far more successful as a prophylactic than as a cure.

Treatment.—We shall not here refer to the obvious treatment, such as rest and seclusion, feeding, sedatives, cleansing of the wound, etc. A goodly number of cases would recover with but the simplest treatment. There is always a fair prospect of survival if the incubation period is over about sixteen days. Wounds of the leg are more favourable than those of other parts, because the toxins have to travel up a greater length of nerve.

Numerous attempts have been made to obtain better results with the antitoxin, but all statistics are much vitiated by two fallacies—first, that of picking out reports (usually of recovery) from the literature instead of quoting consecutive series; second, that of making no distinction between severe cases with a short incubation period and the milder ones which would recover anyhow.

Colossal doses (which are very expensive) are said to

[1] Semple (Review in), *Brit. M. J.*, 1911, ii. 390.

[2] Jacobson and Pease, *Ann. Surg.*, 1906, xliv. 321.

have cured 15 out of 20 cases (Jacobson and Pease). In each of these 300 to 500 c.c. were injected. It is by no means clear that they were severe cases.

Intracerebral injection is or ought to be abandoned. Of 88 collected cases (*v.* Graff) 80 per cent. died; Sawamura reports another series with a 67 per cent. mortality. In several cases abscess of the brain has supervened.

Intraneural injection is probably more reliable than subcutaneous or intravenous, and gives much better results in rabbits (Sawamura).

Intraspinal injection is well spoken of, but definite evidence is not very conclusive. Rogers saved 4 cases out of 7 by giving the antitoxin by all four routes—intraneural, intraspinal, intravenous, and subcutaneous—to each patient. Hofmann[1] reports 30 consecutive cases. In the first 13 only subcutaneous injections were given, and 7 died (=53.8 per cent.); in the last 16, treated by intraspinal injection, only 2 died, of these 4 were very severely affected. Ashhurst[2] treated 5 patients within twelve hours of the onset of symptoms by huge doses (3,000 c.c.) of antitoxin given by all routes together, and only one died; he also saved 4 out of 11 cases in which the incubation period was less than ten days, but only one appears to have had severe symptoms. Altogether he saved 44 per cent. of 23 cases, which is fairly good. At the Bristol Royal Infirmary, 9 out of 31 have recovered. Jacobson and Pease, quoting from two hundred American hospital cases, say that of acute cases 17 per cent. recover, and of chronic cases about 56 per cent.

Baccelli's Carbolic Treatment.—On paper the results obtained by this method infinitely surpass those of every other, but the statistics are compiled in a way that inspires distrust. Baccelli[3] reports that 92 out of 94 "severe" cases recovered, and also 16 out of 38 "very severe" cases. Apparently there were no mild cases treated! The successes are isolated records of individual cures picked out of Italian journals, scores of authors contributing a case or two each.

The treatment is to inject a 3 per cent. solution of carbolic acid hypodermically, rising from 3 grain doses until 30 to 45 grains are given in twenty-four hours. Carboluria results, but is to be neglected.

Magnesium Sulphate Treatment.—The injection of 2 or 3 c.c. of 25 per cent. solution of $MgSO_4$ into the spinal theca is a modern treatment of tetanus which has become rather popular. It is often successful in animals in quieting the spasms, but results are conflicting as to whether it saves lives. In the

[1] Hofmann, *Beitr. zklin. Chir.*, 1907, lv. 697.

[2] Ashhurst, *Am. J. M. Sc.*, 1913, cxlvi. 77.

[3] Baccelli, *Berl. klin. Wchnschr.*, 1911, xlviii. 1021.

human subject the evidence is at present scanty. Phillips[1] reports a consecutive series of 7 patients in which 4 recovered. Out of 28 cases reported in the literature by various authors 16 recovered. The method is by no means free from risk—one patient died and another was only saved by artificial respiration. It would be wise to keep the patient's head up.

Other Methods.—In Russia good results are reported by Krokiewicz,[2] who saved 13 out of 16 patients by giving injections of 10 grains of sheep's brain in saline, the idea being to take advantage of the affinity of the toxin for nervous matter so as to fix it harmlessly.

Summary.—It is probably well to give antitoxin both subcutaneously and by intraspinal injection, and if the symptoms persist to try the magnesium sulphate treatment. When circumstances do not favour a lumbar puncture, the very simple carbolic acid treatment is certainly worth a serious trial.

A. Rendle Short.

OPHTHALMOLOGY.

Toxæmia (Alimentary and Oral) as a Cause of Eye Disease.—Evidence is accumulating that almost all inflammatory diseases of the eyes may be due, directly or indirectly, to auto-intoxication from the mouth or intestines. There is a good epitome of recent literature of this subject in *The Ophthalmoscope* of July, 1913. Amongst the cases referred to we find acute retrobulbar neuritis affecting both eyes, unilateral irido-choroiditis leading to complete blindness in infants suffering from acute gastro-enteritis, and Risley, of Philadelphia, to this cause attributes many cases of phlyctenular ophthalmia. He also quotes cases of optic atrophy, neuro-retinitis with increased blood pressure, and choroido-retinitis with papillitis due to auto-intoxication. Lawford[3] and most other authorities look upon irido-cyclitis as being in many instances due to pyorrhœa alveolaris, and diseases of the corneo-sclera and uveal tract are looked upon as being specially likely to be the result of auto-intoxication. B. T. Lang[4] gives an analysis of 176 cases of inflammation of the eye, in 71 of which the trouble was referable to buccal sepsis. He points out that inflamed mucous areas, such as the gums, which are subject to frequent mechanical disturbance, are the most likely to give rise to eye troubles. It is often argued that pyorrhœa is excessively common, whilst irido-cyclitis and

[1] Phillips, *Proc. Roy. Soc. Med.*, 1910, ii. (Med. section), 39.
[2] Keen, *Surgery*, article "Tetanus."
[3] *Proc. Roy. Soc. Med.*, May, 1913 (*Suppl.*) p. 121.
[4] *Brit. M. J.*, 1913, i. 381.

similar diseases are comparatively rare. W. Lang[1] points out that this only implies that the protecting barrier raised by Nature is generally efficient. He rather questions the wisdom of the dental profession in crowning teeth and building bridges that cannot be kept clean. When Nature's protecting barrier has broken down, and the eyes are affected by a serious inflammation, it is then too late to do anything except to remove the teeth at once. He thinks that the possibility of a septic focus should be investigated, and if found, treated in all cases before an operation on the eyeball is performed. Central senile choroiditis is, in Lang's opinion, no more caused by old age than is the senile edentulous jaw; "both are due to pyorrhœa, and if the mouth were looked after from youth onwards two of the attributes of old age —*sans teeth, sans eyes*—would not occur."

If alimentary toxæmia is at all a frequent cause of eye disease its early recognition is most important. Elschnig thinks that indicanuria in eye disease is evidence of gastro-intestinal auto-intoxication, and that the latter is a probable cause of the disease. Stuelp, of Mülheim, investigated 82 cases of irido-cyclitis without finding any evidence of indicanuria. Von Hippel, of Halle, in 416 cases found indicanuria in only 16. Colombo, of Parma, however, supports Elschnig's view, and emphasises the importance of testing the urine early before the institution of treatment. His cases show that the indican reaction may disappear with the improvement of the eye condition and return during relapses.

S. H. Browning[2] advocates the routine examination of the fæces and urine, at any rate in those cases in which the cause of the eye disease is not immediately obvious. The pyorrhœa alveolaris may have been cured, leaving a general infection of the alimentary tract as a result of many years of pus swallowing. Such patients with chronic irido-cyclitis may have clean mouths, but on examination of the fæces may show that they are suffering from bacterial infection of the bowel. He has found other patients with colitis, perhaps unsuspected, or only suffering from chronic constipation, who have been cured of the eye disease by vaccine and other treatment.

The proof that the eye condition is caused by the intestinal or urinary infection is the cure of the eye disease at the same time as the other general condition. Browning finds this can most readily be brought about by the use of an autogenous vaccine.

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The Causation of Myopia.—Myopia is often regarded as an over-adaptation of the eye to the requirements of civilisation, but it must not be forgotton that hypermetropia, in England

[1] *Lancet*, 1913, i. 1368. [2] *Ophthal. Rev.*, April, 1913.

at any rate, is still about five times as common as myopia. Most are agreed that in a great many instances myopia is associated directly or indirectly with school-work, and great pains are being taken to prevent the occurrence of myopia in schools, and by means of special classes to mitigate its extent and retard its progress in those instances where it has already become manifest. The exact relationship between school-work and myopia is, however, still in dispute. Sattler in 1907 attributed myopia to the pressure of the recti muscles upon the eyeballs when the movements of the eyes necessitated in reading are produced. The consequent increase of intra-ocular tension, according to him, stretches the posterior segment of the globe. But there is no evidence that the intra-ocular tension is increased by the action of the recti; secondly, where (as in buphthalmos) the intra-ocular tension is known to be increased, there is no yielding of the posterior segment; thirdly, the changes in myopia are quite unlike those found in increased tension.

Wilson [1] reviews 500 cases of myopia which have come under his notice, 338 females and 162 males. Hereditary tendency to myopia was found in 54 per cent. Keratitis, or some similar inflammation of the anterior segment of the eye, appeared to be the next most important factor, since nearly 20 per cent. had some degree of corneal opacity. He points out that the near work of school years is contemporaneous with manifestations of heredity, and that it is possible that the respective responsibilities of each may be confused. He regards myopia as essentially an enfeeblement of the resisting structures of the posterior segment of the eye, and thinks that keratitis in some way—perhaps by inflammation spreading backwards—affects the resisting power of the sclera. In his view, it is not so much the school-work and conditions which should receive attention as the local health of the eye and the general vigour of the body which should be improved.

Harrison Butler, reviewing Levinsohn's book on myopia, [2] draws attention to facts which rather support this view. During the last fifty years the frequency and degree of myopia amongst medical students in Germany have not altered. For fifty years Germany has paid great attention to school hygiene, and yet the proportion of myopia is not reduced. It is quite likely that any cause which makes the body flabby will increase the undue distensibility of the sclera. In Sweden, where *games* in the open air have replaced drill, the percentage of myopia amongst students has fallen in a most astonishing manner. Levinsohn holds the view that in looking down, as for instance in reading, the eyes are to some extent suspended in the orbits by the optic nerves, and that the tension on the posterior segment of the eye causes the sclerotic to yield. This theory is open to many

[1] *Glasgow M. J.*, 1913, lxxix. 250. [2] *Ophthalmoscope*, 1913, xi. 54.

objections, amongst others that myopia, even in high degree, is found in children of three or four years of age, and that it is common to find one eye highly myopic whilst the other is emmetropic.

On the whole, for practical purposes, it seems best to adopt the view that myopia is due to enfeeblement of the posterior segment of the eye, and to aim at improving the physique of the patient, as well as the conditions of school work.

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Sympathetic Ophthalmitis. — Franz Deutschmann, of Hamburg, claims to have produced sympathetic ophthalmitis in monkeys by introducing pieces of choroid from cases of the disease in man. He also claims to have found a Gram-positive diplococcus, which is itself capable of producing sympathetic ophthalmitis. His experiments go to prove that the track taken by the micro-organism from the exciting eye to the sympathising eye is from the choroid into the orbital lymphatics, and from them into the optic nerve-sheath, and so via the chiasma into the nerve-sheath of the other eye. From this it reaches the lymphatics surrounding the second eye, and eventually attacks the choroid. Deutschmann's results are, however, disputed. Some regard the experimental sympathetic ophthalmitis as being only a uveitis caused by the introduction of alien albuminous matter.

CYRIL H. WALKER.

Reviews of Books.

British Journal of Surgery. Vol. I. No. 1. July, 1913. Bristol: John Wright & Sons Ltd. 7s. 6d. net.

We heartily welcome the appearance of the first number of the *British Journal of Surgery*. We have, of course, the *Annals of Surgery* in our own language, but it is essentially an American journal, and though the names of some of the writers are well known to English surgeons, yet many are not, and it greatly adds to the value of any communication to the reader if he knows something of the qualifications of the writer to form the opinions he expresses. Some of the largest continental countries have had Journals of Surgery for some years, and it was felt that this country should not be behind in this respect.

We think the editors and the publishers have produced a journal which will do great credit to British surgery. The articles in the first number are of much value, and deal with many advances in the surgical art. It is profusely and very well illustrated, and so printed as to be very easy to read.

The opening paper is by Dr. David Newman, of Glasgow, and is a very valuable contribution to the study of symptomless renal hæmaturia. The new methods of producing anæsthesia are fully considered by Dr. Shipway, an anæsthetist to Guy's Hospital, in an able paper; and to the new method of intratracheal anæsthesia Mr. Kelly, of Liverpool, has devoted a very instructive article. Such topics are, of course, of vital importance to the surgeon. Amongst many other very interesting papers is one on "Rupture of the Crucial Ligaments and Fracture of the Spine of the Tibia," of which Mr. Robert Jones, of Liverpool, is joint contributor. It is exceedingly well illustrated by skiagrams. Perhaps many readers will turn at once to what must be one of the most interesting parts of the Journal—the "Visit to Surgical Clinics at Home and Abroad," for they will there find an account of the clinics of such well-known surgeons as Sir Wm. Macewen and Professor Tuffier of Paris. Both are written in such a way as to present a very realistic picture of the surgeon at work.

We think the record of "Instructive Mistakes" by surgeons —four of which are given in this number—may prove of much value. They are published anonymously.

There is only one feature of the Journal we venture to think undesirable, and that is the omission of any statement as to the post held by the writer of the article (we do not think the omission of his qualification of any moment). When reading the paper by Mr. R. E. Kelly on "Intratracheal Anæsthesia," we concluded the author was an anæsthetist. We find, however, that he is on the surgical staff of the Liverpool Infirmary. It would have been interesting when reading the article to have known it was written by a surgeon. It seems most fitting that the frontispiece of the Journal should be an excellent picture of Lord Lister, and the first page devoted to a short reference to his life's work.

We very strongly recommend the *British Journal of Surgery* to all British surgeons as one of the best methods of making acquaintance with the advances of surgery, and as a collection of papers of much interest and value.

International Medical Monographs. General Editors: LEONARD HILL, M.B., F.R.S., WILLIAM BULLOCH, M.D. **Diabetes: its Pathological Physiology.** By JOHN J. R. MACLEOD, M.B., Ch.B., D.P.H. Pp. xi, 224. London: Edward Arnold. 1913. 10s. 6d. net.

In this work will be found a very able account of the experimental work by which the pathology of diabetes is gradually being elucidated. All clinical workers should have a knowledge

of the extensive modern researches into this subject, as they form the scientific basis of accurate clinical diagnosis and treatment. This book can be confidently recommended to them as giving a clear and not too lengthy presentation of this difficult study. In spite of all the work that has been done, we are still far from understanding the essential nature of diabetes, and to no subject do the Hippocratic maxims that experiment is fallacious, true judgment difficult, more closely apply. Amongst the number of apparently contradictory experiments and rival theories the clinical student of diabetes may well feel bewildered, and in need of a trustworthy guide. He may turn with confidence for such critical guidance to this little book. We note that the views that sugar exists in the blood in a loose combination with proteid, and that glycolysis is dependent upon a pro-ferment furnished by the muscles and activated by an internal secretion of the pancreas, are held to be not proven. With regard to the action of the ductless glands, the author considers that present knowledge does not go further than to show that the adrenals, pancreas, parathyroids and possibly posterior lobe of pituitary are most important in the control of the carbohydrate metabolism, that their removal means loss of hormone control, and that in the case of the pancreas and parathyroid this hormone control facilitates and in that of adrenals depresses utilisation of sugar. The chapters on examination of urine, on the behaviour of sugar in the blood, and on the limits of assimilation will be found especially useful in clinical work. The bibliographies at the end of each chapter form a valuable feature of the work.

For much of our knowledge of the pathology of diabetes we are indebted to the researches of the author and his co-workers, and we cordially recommend his book as a most useful and timely one, and written with authority.

Influence of Thermal Environment on the Circulation and the Body-Heat. By EDGAR R. LYTH, M.B., M.R.C.S. Pp. iv, 72. London: John Bale, Sons & Danielsson Ltd. 1913. Price, 2s. 6d. net.

This interesting series of studies deals with the changes brought about in the state of the circulation and heat of the body by increasing or reducing the surrounding temperature. The experiments have been carried out very largely on the author himself, and the conclusions are said to be based upon more than twenty-five thousand observations of the pulse rate, the blood pressure and the superficial and deep temperatures of the body under various conditions.

On exposing the body to cold air, it is found that the pulse

rate falls off, although, owing to the contraction of the peripheral vessels, the blood pressure rises. Passing into a hot atmosphere brings about reverse changes—the pulse rate increases, but the relaxation of the peripheral vessels induces a fall of blood pressure. Interesting observations on the changes produced by immersion of the body in hot and cold water are also set forth in considerable detail.

Perhaps the most remarkable chapter is that dealing with the influence of wind on the pulse rate, when some really striking figures are produced. To give a few examples. It is stated that an average pulse rate of 79.4 beats per minute inside a moving horse bus rises to 96 on going on the top, whilst similar figures in the case of a tramcar are 75.5 inside and 100 out. When the car stops, the number of beats falls until the normal 72 is reached, but as soon as the car starts again the pulse rate goes up to its previous figure. Continued exposure to wind may raise the number of pulse beats to as many as 150 per minute. That this stimulating effect is due to the wind is supported by the fact that in a sheltered position inside a railway train moving at express speed the pulse remains quite normal. A somewhat similar action on the pulse rate is noted when the body is immersed in water, and the water set in motion by gently stirring.

The general conclusion arrived at by the author is that in a given thermal environment a certain corresponding equilibrium of the circulatory apparatus ultimately becomes established, comprising, as regards the blood-vessels, a suitable degree of muscular contraction of their coats, and as regards the heart a suitable rate and force of its pulsations. Besides determining the pressure and the speed of the current, these factors involve a corresponding distribution of the blood in the skin and in the arterial vessels.

The results of the various kinds of experiments are well illustrated by diagrams and lucidly discussed, and will well repay careful consideration from the medical standpoint.

Technik der Diagnose, Operation und Harnleiterbehandlung bei Nierentuberkulose. Von Hofrat Dr. FELIX SCHLAGINTWEIT. S. v, 143. München: J. F. Lehmann. 1912.

Since 1906 Dr. Schlagintweit has made a special study of tuberculosis of the kidney, and given minute attention to technique in diagnosis, operation, and treatment of the ureter during the operation and subsequently. The results of this study are given to the reader in the book before us.

First the origin, the seat of the primary focus and the

mode of spread of urogenital tuberculosis are considered, then the symptoms, then the technique employed in diagnosis, and lastly the operation of nephrectomy in all its details. Case histories are freely cited to illustrate special points. The sections in which the above matters are dealt with are each and all interesting and illuminating.

The author is a strong supporter of early nephrectomy, and even of late nephrectomy if the opportunity for early operation has been allowed to pass away.

A large portion of the book is devoted to a consideration of the treatment of the ureter—a vexed question. Hard and fast rules for treatment of the ureter are not laid down, but various methods which the author has tried are described, and those methods which deserve further trial in extended series of cases are indicated.

It would be easy to quote from the pages of this book many valuable observations and conclusions, but we must instead strongly advise surgeons to read what is there written for themselves. The systematised method of investigation advocated is worthy of the closest imitation.

The possibility of early diagnosis and the danger of delay in the treatment of urogenital tuberculosis should be better understood by practitioners. As the author points out, few things can be simpler for a practitioner to do than to send a speciment of urine to a pathological institution to be examined for tubercle by inoculation if ordinary examination yields a negative result. This should be done without delay in all cases in which renal or vesical troubles are not obviously due to other causes then tubercle. Chiefly in that way will it be possible to diminish the number of those terrible cases of vesical tuberculosis with which we are all only too familiar.

Diseases of Children. By Various Authors. Edited by A. E. Garrod, D.M., M.A., F.R.C.P., F.R.S., F. E. Batten, M.D., M.A., F.R.C.P., and Hugh Thursfield, D.M., M.A., F.R.C.P. Pp. xv, 1184. London: Edward Arnold. 1913. 30s. net.

We live in an age of encyclopædias, and medical literature has fallen in with the prevailing fashion. It would almost seem as if knowledge were becoming so extensive that no one could pretend to more than a general acquaintance with any subject, and that compressed works of reference, wherein special points may readily be looked up, and then perhaps forgotten, were the only means by which ordinary persons could keep abreast of the times.

The present volume on *Diseases of Children* is certainly a marvel of compression, without any undue sacrifice of lucidity. Pediatrics, as transatlantic authors love to call it, is a specialism of a peculiar character, in that its range is almost co-extensive with that of general medicine and surgery, and it is somewhat significant that nearly all the writers in this volume, while possessing special knowledge and experience in children's diseases, are also on the staff of general or special hospitals where adults form the bulk of the patients, and are known in general medicine and surgery as men of light and leading.

The names of the editors are, perhaps, a sufficient guarantee of the excellence of the contents, and their own contributions form a series of monographs of sufficient value to justify the book were there nothing else in it to commend. Dr. Batten's account of organic nervous diseases is particularly excellent, and gives a clear and well-arranged account of a complex subject in a most succinct manner. The diseases of the alimentary system, by Dr. Hutchison and Dr. Waugh, and the feeding of infants and children, by Dr. Cautley, are also very valuable chapters.

Dr. A. E. Garrod contributes a short and very philosophical chapter on the general subject of disease in children, and also writes on the diseases of the ductless glands and disorders of metabolism; the latter chapter is specially interesting as containing a *résumé* of much of the author's original investigations. The chapter on immunity, serum therapy and vaccines, though in itself a useful exposition of the subjects, does not appear to have any special bearing on disease as it is seen in children, but in other respects the book keeps well within the range indicated by its title. The apportionment of space to the various subjects has been well thought out, and while rare conditions and obscure points are duly included, the practitioner will find that more ordinary matters are allowed sufficient space for full discussion, a fact which will render the book of considerable practical value to the average man.

It is impossible in reviewing a work of this sort to criticise special points, but it may be said generally that while the views set forth by the various contributors are sufficiently individual, they represent the highest standard of medical thought in this country, and may be accepted as authoritative, though in details, perhaps, there may be differences of opinion.

We can confidently recommend this book as a very valuable work of reference, which should prove most useful to all practitioners who have to treat disease in children. It is up to date, practical and clearly written, and considering the size of the volume and the large field covered by its subject-matter, remarkably cheap.

The Bacterial Diseases of Respiration, and Vaccines in their Treatment. By R. W. ALLEN, M.D., B.S. Pp. x, 236. London: H. K. LEWIS. 1913. 6s. net.

This book is largely a re-presentment of articles by the author which have appeared in the *Journal of Vaccine Therapy* during the last twelve months. It is therefore an up-to-date exposition of the author's views and practice. It contains a detailed description of the various organisms found in the respiratory tract, both pathogenic and non-pathogenic, with directions for obtaining and examining pathological products from the bacteriological point of view. The vaccine treatment of the various diseases of the respiratory organs is very fully dealt with, and the last two chapters are devoted to the diagnosis and specific treatment of pulmonary tuberculosis.

The book deals with subjects which are to a considerable extent controversial, at any rate as to detail, and which require for their appreciation a large experience and acquaintance with authoritative opinion. It will be found of interest to those practitioners who have specially studied the subjects of which it treats, although they may not always be able to accept the author's views in their entirety.

There are a number of photographs and micro-photographs illustrating bacterial growths, but we doubt whether the latter will prove of much assistance to those previously unacquainted with the morphology of the organisms depicted.

Les Bandages, Pansements et Appareils chirurgicaux. Par Dr. CHARLES JULLIARD. Pp. xii. 221. Geneva: Georg et Cie. 1913. Price 10 fr.

This somewhat elaborate treatise contains a good deal more than is suggested by its title. The book is divided into four sections, dealing respectively with Dressings, Bandages, Extension Apparatus and Splints, the latter term being used in its most comprehensive sense.

A vast amount of information is contained in its two hundred and twenty large magazine pages, and the book should prove useful as a work of reference to anyone wishing to refresh his knowledge of the technique of any method with which he is not familiar.

To quote one example of the comprehensive nature of the contents, an illustrated description is given of the method (attributed to Steinmann, of Berne, and now somewhat fashionable) of applying extension in cases of fracture of the long bones, by means of a pin transfixing the bone below the site of injury.

The book is well printed on good paper, and the illustrations

(over three hundred in number, and mostly from photographs) are excellent, but the binding is flimsy in the extreme. An alphabetically-arranged index would be an advantage.

The Practitioner's Encyclopædia of Medicine and Surgery. Edited by J. KEOGH MURPHY, M.C. (Cantab.), F.R.C.S. Second Edition. London: Oxford Medical Publications. 1913.—The first edition of this book appeared in the latter half of last year, and the short period of time which elapsed before this second edition was called for is as good a testimonial as any editor could desire to the value of the work. It does not pretend to be an exhaustive manual of medicine and surgery, but is designed to provide the general practitioner with a handy book of reference. He can here find, in a succinct form, up-to-date and reliable information which will help him in the solution of very many of those medical and surgical problems which he is so constantly called upon to face in the course of the day's work. The book is divided into five parts: (1) General Medicine, (2) General Surgery, (3) Obstetrics and Gynæcology, (4) Special Regions, (5) Special Forms of Treatment. These in their turn are sub-divided into sections which treat of such varied subjects as Life Insurance Problems, Mental Disorders, and Hospital Construction. There are some one hundred and sixty contributors to the work, most of them hospital physicians and surgeons who are well known authorities upon the subjects with which they are called upon to deal in this book. Of course, with so many contributors the merits of the articles vary, but, taken as a whole, the standard of merit is high, and moreover no effort has been spared to render the information given of practical help and utility. The indexing is good, and renders reference to any subject easy. It seems to us that this book fulfils the purpose with which it was written. It cannot fail to be useful to anyone who wishes to keep his knowledge up to date, and who has neither time nor opportunity for constant reference to a medical library. We consider that any general practitioner will find in this encyclopædia a book admirably adapted to his needs, and one which will prove a valuable investment.

Tuberculin Treatment. By CLIVE RIVIERE, M.D., and EGBERT MORLAND, M.D. Second Edition. Pp. xvi. 247. London: Oxford Medical Publications. 1913. 6s. net.—The first edition has been soon exhausted: in it the authors endeavoured to raise tuberculin treatment above the field of doubt and controversy, and to place its principles and practice alike on a firm basis. Since preparing the first draft four points have specially impressed themselves on the writers. Firstly, the rapid growth of institutions in the British Isles where tuberculin is given, and the safety of its careful administration. Secondly,

the danger of ill-considered general reactions, and the grave doubt whether the deliberate production of a focal reaction is wise in pulmonary cases. Thirdly, the very great value of a uniform standard of measurement for tuberculin, and of the cubic millimetre as a unit. Fourthly, amongst the abundance of these new preparations the value and growing importance of the albumose-free tuberculin. The revival of tuberculin in England, under the teaching of Almroth Wright and his pupils, is now being greatly encouraged by the introduction generally of the dispensary system under the Insurance Act, where tuberculin treatment is to be in vogue, more particularly for those patients who are not able to receive sanatorium benefits. As yet it is too early to hear of any very satisfactory results, and probably there will be, to a minor degree, a repetition of the history of 1890, when it was found, after a few months' experience of the new drug, that its action was " to promote the formation of cavities and to lead to extension of the disease," " to exhaust the patient, and to cause loss of weight and strength." The authors inculcate every care and precaution, and this book will do much to prevent any recurrence of the experience of 1890. It is to be hoped that the new class of Tuberculosis Officers will read, mark, learn and inwardly digest the teachings of this carefully compiled and reliable handbook on such debatable ground.

Notes on the Treatment of Tuberculosis. By JOHN LAIRD, L.R.C.P.I. Pp. 85. Bristol: John Wright & Sons Ltd. 1912. 2s. 6d.—The contents of this small volume are of considerable interest to all those working with tuberculosis. The author, while not denying the importance of hyperalimentation and aerotherapy, makes a strong plea for the more extended use of medicinal remedies. In particular he advocates the prolonged administration of calcium salts, and quotes many eminent authorities in support of this view. The short section on pulmonary tuberculosis contains much that in our opinion is not sufficiently generally understood in this country, namely that the important point about this distressing disease is to recognise it in its earliest and therefore most easily curable stages, that to wait until tubercle bacilli are demonstrable in the sputum is to wait until the disease is far advanced, and that the descriptions in our text-books of early pulmonary tuberculosis are in reality descriptions of advanced disease. The author also suggests that all doubtful cases should be treated as though they were definitely tuberculous.

Diseases of the Liver, Gall-Bladder, and Bile Ducts. By HUMPHRY DAVY ROLLESTON, M.A., M.D., F.R.C.P. Second Edition. Pp. xv. 811. London: Macmillan & Co. Ltd. 1912. 25s. net.—We are extremely pleased to see a second edition of

this well-known book, which has been thoroughly revised and brought up to date. As a work of reference on any of the diseases with which it deals it is admirable in every way, and can be most confidently recommended to practitioners. The references to other authors throughout the text are very numerous. It is excellently illustrated with 108 figures, including many micro-photographs, in addition to seven coloured plates.

The Medical Diseases of Children. By T. R. C. WHIPHAM, M.A., M.D. Oxon. Pp. xi, 417. London: University Press, 1912. 10s. 6d. net.—There is a considerable disparity. between the various chapters of this work. The sections relating to development, feeding and derangements of nutrition are excellent, although we must confess some surprise that a physician who has had much practical experience of the feeding of infants should prefer lactose to the best cane sugar as an addition to the bottle. The chapters dealing with the pneumococcal, rheumatic and tuberculous infections are modelled on the latest teaching, pneumonia being rightly classed among the pneumococcal infections. We cannot understand why so important a subject in children as diseases of the blood and lymphatic glands should be treated in the same chapter as diseases of the ductless glands, nor why cretinism should be classed among diseases of the nervous system and not among diseases of the ductless glands. As some of the rarer diseases in children are briefly mentioned, we think the value of the book would be increased if references to original papers and treatises on the subject were given. We regret there is no chapter on skin diseases; we also miss any collection of recipes for the preparation of foods, or directions as to nursery hygiene. The book is excellently illustrated.

Medical Inspection of Schools. By ALLEN G. RICE, M.D. Pp. 109. Providence: Snow and Farnham Company. 1912.—This monograph is the fifty-fifth prize dissertation under the Fiske Fund. It consists of a historical and critical survey of the systems of medical inspection of elementary schools in America, Great Britain and the continent. The subject is a large one, and is dealt with by the author in a very complete and masterly way. Broad principles of organisation are clearly indicated, and there is considerable detail in the description of the various methods adopted in different countries, townships and states. Though of primary interest to doctors and administrators in the United States, there is much which will be found of value to experts in this country, as the author has devoted much space to the consideration of British school inspection, of which he is a friendly but acute critic. Judging from internal evidence, we feel that the trustees of the Fiske

Fund have awarded the prize to a thoroughly deserving essay, and we commend the book to all interested in this important subject in England.

A Manual of Infectious Diseases Occurring in Schools. By H. G. ARMSTRONG and J. M. FORTESCUE-BRICKDALE, M.A., M.D. Pp. vi. 150. Bristol: John Wright & Sons Ltd. 1912. Price 3s.—This little book is issued by the Association of Preparatory Schools, for the assistance of teachers who have the care of children's health. For this purpose it is admirably fitted, and it will be found to deal not only with the commoner infectious fevers, but also with rarer school complaints, such as glandular fever, cerebro-spinal meningitis, epidemic poliomyelitis, and infectious conditions of the skin and eye. We should especially recommend to the teacher a careful study of the opening chapter, which is devoted to the consideration of the problems of infection and disinfection.

The Nutrition of the Infant. By RALPH VINCENT, M.D. Fourth Edition. Pp. xviii., 343. London: Baillière, Tindall and Cox. 1913. 10s. 6d. net.—Dr. Vincent has added a good deal of new matter in writing this edition of this well-known book: the chapters which describe the bacteriology of milk and the intestinal disorders of infancy have been re-written to a large extent, and some excellent micro-photographs appear for the first time. The fact that a fourth edition has been called for speaks for itself, and we need say no more on behalf of the book than that it is an admirable presentation of the case for scientific substitute feeding. It must be read, not as a text-book, but as a tract in defence of certain views held by the author. We know of no book which exposes the vices of certain proprietary foods more fearlessly than this one.

How to Diagnose Smallpox. By W. McC. WANKLYN, B.A., M.R.C.S., M.R.C.P., D.P.H. Pp. vii, 104. London: Smith, Elder & Co. 1913. 3s. 6d. net.—The increasing neglect of vaccination justifies renewed attention to the diagnosis of smallpox, and during the last year or two several well-qualified observers have furnished guides to aid in this difficult and important matter. Dr. Ricketts' well-known book reviewed in detail the complete question, and has become a classic. Dr. Hanna furnished illustrative details of his experience, showing especially the value of vaccination and revaccination, and now Dr. Wanklyn, from his unusual opportunities as a former Medical Superintendent of the River Ambulance Service (Smallpox) of the Metropolitan Asylums Board, which gave him the supervision for diagnostic purposes of some 10,000 cases, furnishes a modest but practical compendium, based upon the

teaching of Ricketts, which should prove more than useful to those for whose especial instruction it is published. In our opinion the book would hardly serve as a first text-book on the subject, but having gained the knowledge usually furnished in the text-book the practitioner is here warned of the pitfalls which may occur to all dealing with smallpox, and especially to the over-confident. It resembles a practical laboratory hand-book, in that its greatest use will be felt when in the presence of the actual experiment.

Studies in Small-pox and Vaccination. By WILLIAM HANNA, M.A., M.D., D.P.H. Pp. 52. Five charts, twenty-five plates. Bristol: John Wright & Sons Ltd. 1913. 7s. 6d. net.—We have been much interested in reading Dr. Hanna's new presentation of an old story, and especially in the good photographs and graphic charts which liberally adorn the volume. The "observations on the interaction of concurrent Variola and Vaccinia" (Part III) are particularly worth study, and we do not know of any work in a small compass that will furnish more cogent argument and illustration in support of the protective influence of vaccination. A very useful book, well produced and illustrated.

Therapeutic Notes.

THE CAUSES OF VARIATION IN THE PREPARATIONS OF ERGOT

ATTENTION has often been called to the variability of the preparations of ergot, and their rapid deterioration. Wood and Hofer, in 1910, estimated that under the most favourable conditions of protection from contact with air, a fluid extract deteriorates at the rate of 10 per cent. per month, and in hermetically-sealed capsules the diminution in activity ranged from 0.2 to 1.1 per cent. per week, the latter being equal to about 50 per cent. per annum. Edmunds, in 1911, also found that many pharmaceutical preparations of ergot deteriorate very rapidly; the non-pharmacopœial preparations in the United States were specially variable. Largely owing to the

work of Barger, Dale and Carr, it is now known that sphacelotoxin, the so-called active principle of ergot described by Jacobi, and the cornutine and sphacelinic acid of Kobert, are impure bodies, which owe their activity mainly to the alkaloid ergotoxine, which is the hydrate of the inert substance ergotinine described by Tarret in 1875.

The other substances isolated from ergot are the so-called putrefactive amines, which are closely related to adrenaline chemically and physiologically, and are also found as products of the decompositions of certain amino-acids. Some of them have been detected in small quantities in the urine by Bain, and they are termed " pressor bodies," owing to their action on the blood-vessels.

Carr and Dale, in a paper read before the Pharmaceutical Conference on July 23rd, 1913, insist that the time has now come for a reform in the official processes for extracting the active principles of ergot. The main action of the drug (that on the uterus) is due to ergotoxine, which is soluble in alcohol, but not in water. Its salts are also but little soluble in water, but may form colloidal solutions from which they are precipitated by acids. Ergotoxine is unstable in the presence of alkalies, and is dehydrated by heating with alcohol, whereby the inert ergotinine is formed.

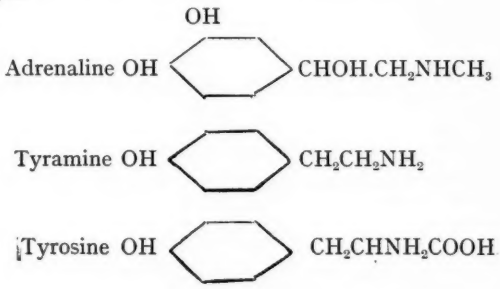
Extractum ergotæ, or *ergotin*, is an alcoholic extract, but the ergotoxine is largely removed by the evaporation of the alcohol, by the addition of hydrochloric acid, and in other ways. The *liquid extract* is made with water, and therefore contains only a very small quantity of ergotoxine. The *infusion* is also a watery preparation, and the *ammoniated tincture* is unstable, owing to the presence of the alkali.

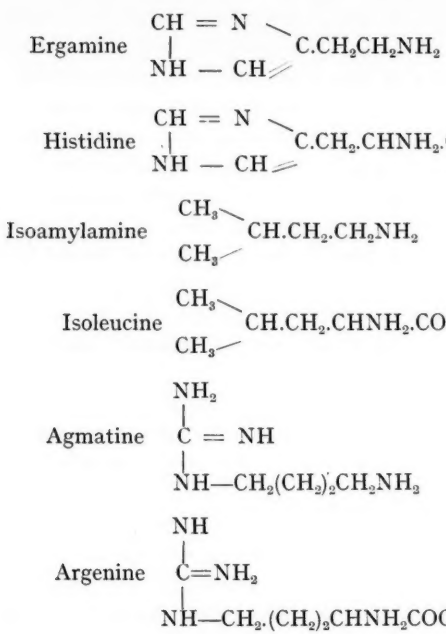
These preparations owe their activity to the presence of the putrefactive amines. The principal bodies so designated are: Tyramine (a tyrosine derivative), ergamine (a histidine derivative), agmatine, and isoamylamine. These act as adjuvants. Tyramine is a vaso-constrictor closely resembling adrenaline in action, but capable of producing its pharmacological effect when given by the mouth. It also sets up

contractions in the pregnant uterus like ergotoxine, but differs from the latter in producing its effect at the neuromuscular junctions, and not at the peripheral ganglion cells. Ergamine, which acts directly on the muscle, dilates the blood-vessels, and produces contractions of the uterus, whether pregnant or not. Isoamylamine (a leucine derivative) produces vaso-constriction similar to that produced by adrenaline, but not so powerful. Agmatine resembles ergamine in action, but is weaker. Carr and Dale, in the paper alluded to, recommend that the *extractum ergotæ* should be made with 60 per cent. alcohol, acidified with citric acid. The *fluid extract* should be made as in the U.S.P., with 45 per cent. alcohol, containing 2 per cent. acetic acid, and take the place of the present *extractum liquidum*. The *ammoniated tincture* and the *injection* should be abandoned, and in place of the latter a solution of the salts of ergotoxine, with or without the putrefactive amines, should be introduced.

Meanwhile, it is clear that owing to variations in potency, a physiologically standardised preparation should always be employed, and that the date of the test should be marked on the bottle. Preparations more than six months old will probably have deteriorated considerably. Whether the pure alkaloid, or this combined with the putrefactive amines, should eventually supersede the galenical preparations, is a point which clinical experience alone can decide.

The chemical relationships of the various substances under discussion will be seen by reference to the following structural formulæ :—





Thus it will be seen that the putrefactive amines, tyramine, ergamine, isoamylamine and agmatine, are derived from tyrosine, and the hexone bases histidine, leucine and argenine respectively, by the subtraction of CO_2.

J. M. FORTESCUE-BRICKDALE.

Notes on Preparations for the Sick.

Fortovim.—HODDER & Co., Bristol.

Visem.—ST. IVEL LTD., Yeovil.

To the making of varieties of milk foods there seems to be no limit.

Under the name Fortovim we find a concentrated proteid food, which is stated to be free from starch, sugar and fat, but

containing glycero-phosphates. Our examination showed only traces of fat, but the absence of this food constituent is not always an advantage. The main constituent is quite obviously milk proteid.

Visem is extensively advertised as a tonic milk food, containing lecithin, and our analysis confirms this statement. A small percentage of fat is usual in such preparations, but the bulk of this component of the original milk has been removed.

Validol and Compounds.—ZIMMER & Co., Frankfort-on-Main.—This isovalierianic-menthol ester has now been in use for some fifteen years, and has been found useful for a great variety of nerve conditions. For sea-sickness a dosage of 5 to 10 drops every hour, and as a nerve tonic 5 drops on sugar or in spirit may be taken three times a day.

It is mounted also in rose-coloured pearls, in tablets, chocolates, bon-bons, as an effervescent salt, with 10 per cent. of camphor as Validol-camphoratum, and as Brom-Validol tablets, containing 15 grains of sodium bromide.

Helmitol Co. Tablets. Hydrastinin-hydrochlor Tablets.—THE BAYER COMPANY, London.

Tablets "Helmitol" Co. contain equal parts of helmitol and acid sodium phosphate, and have been introduced at the express request of a number of medical men, in whose experience the addition of the acid phosphate is advisable in certain conditions associated with pronounced alkalinity of the urine. Especial importance has been attached to the use of the compound in bacillus coli cases.

The dose is two to three tablets dissolved in plenty of cold water three times a day, and the tablets are dispensed in original tubes of twenty.

Tablets Hydrastinine HCl.—This preparation is of great interest, as the synthesis of the complicated alkaloid is looked upon as a chemical achievement. The alkaloid has been found to be in every way identical with that obtained by oxidation from the hydrastine of the rhizome.

The tablets have the advantage over the ordinary galenical preparations of hydrastis of definite composition, while it is now recognised that hydrastinine has advantages over hydrastine, that its styptic action is more powerful and lasting, that it is less depressing to the heart, and that it does not cause tetanic spasms. The tablets, which are silver-coated and packed in tubes of fifteen, are of special service in checking hemorrhages and discharges. The dose is one tablet swallowed with a draught of water three or four times a day.

Kalari Biscuits.—CALLARD & Co., London.—These are palatable biscuits, to be eaten under the same condition as ordinary bread and for use instead of bread and toast. They are free from starch and sugar, consisting almost entirely of milk proteids and vegetable albuminoids. The relative value of bread and toast is shown by the following analysis :—

	Wheaten Bread.	Toasted Bread.	Kalari Biscuits.
Starch, dextrine, etc. ..	50.0	85.5	.0
Moisture	40.0	.0	8.1
Fat	.8	1.2	26.6
Cellulose	.7	1.0	.0
Albuminoids	7.2	10.5	60.8
Mineral matter	1.3	1.8	4.5
	100.0	100.0	100.0

Bread loses moisture when toasted ; the proportion of the fat-producing constituents (carbo-hydrates) is thus increased. Toast is therefore more fattening than bread, unless it is burnt almost to a cinder ; it is then charcoal and unfit for food.

Wander Malt Extract, with Iron Iodide. Wander Malt Extract, with Hæmoglobin.—A. WANDER LTD., London, E.C.—These samples are crystalline powders having the composition indicated.

" Wander " Malt Extract (Crystalline) with Iron Iodide is an elegant and exceedingly palatable product. It does not oxidise, and therefore gives perfect security of correct dosage and rapid absorption of ferrous iodide. In addition to this, the associated malt extract prevents any symptoms of iodism or gastric disturbance, corrects astringency, and enhances the value of the treatment with its digestive and flesh-forming properties.

This preparation affords a means of administering that valuable remedy ferrous iodide in a perfectly stable and satisfactory manner, for the disadvantages of the official syrup and other preparations have been overcome. It may be advantageously prescribed wherever ferrous iodide is indicated, such as tuberculous conditions of the glands, bones and joints, various forms of anæmia, and in certain rheumatic affections.

Of the Hæmoglobin compound a full dose of one tablespoonful contains 3 gramms. (46½ grains) of pure Hæmoglobin.

Other combinations of this malt extract are prepared with guaiacol carbonate, with glycero-phosphates and with iron pyro-phosphate.

Œthone-Falcoz.—WILCOX, JOZEAU & Co., London.—This alcoholic liquid, belonging to the carberine series, has the composition $C_7H_{16}O_3$. It exerts a rapid and efficacious influence on all kinds of spasmodic cough, and therefore is of value in cases of whooping cough. Thirty to fifty drops taken in syrup and mixed with water just before its use is a valuable remedy in many varieties of cough due to chronic bronchitis, asthma and tuberculosis.

Winox.—WINOX LTD., 65 London Wall, E.C.—This wine-food is described as the best tonic wine, containing the natural elements of sound wine, English beef and pure malt. Its analysis is given as follows:—

Specific gravity	1062.20
Alcohol (by vol.)	19.12 per cent.
Solids	20.42 ,,
Nitrogen	0.111 ,,
Mineral constituents	0.74 ,,
Phosphoric acid	0.168 ,,
Equal to	
Phosphate of lime	0.367 ,,

"The Company claim that by concentrating the grape juice before preparing the wine from which 'Winox' is made its value could be greatly increased, and that it is proved by analysis that wine thus made contains three times the normal amount of natural phosphorus."

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the list in June.

August 30th, 1913.

L. M. Griffiths, (1)	1 volume.
Dr. H. D. Rolleston (2)	1 ,,
Dr. Shingleton Smith (3)	1 ,,
Dr. Francis H. Williams (4)	1 ,,

EIGHTY-NINTH LIST OF BOOKS.

The titles of books mentioned in previous lists are not repeated.

The figures in brackets refer to the figures after the names of the donors, and show by whom the volumes are presented. The books to which no such figures are attached have either been bought from the Library Fund, or received through the *Journal*.

Bernstein, J. M. ..	*Applied Pathology*		[1913]
Cunningham, D. J.	*Text-Book of Anatomy* (Edited by A. Robinson)	4th Ed.	1913
Dolan, T. M. ..	*Our State Hospitals*		[N.D.]
Fischer, M. H. ..	*Zur Behandlung der Nephritis*		1913
Haines, H. A. (Ed.)	*Memorial of Charles Morehead*	(1)	[1884]
Henriksen, P. B. ..	*Nervenregeneration*		1913
Herman and R. D. Maxwell, G. E.	*Student's Handbook of Gynæcology*	2nd Ed.	1913
Jones, H. L. ..	*Ionic Medication*		1913
Lees, D. B.	*Incipient Pulmonary Tuberculosis*		1913
Lyth, E. R.	*Influence of Thermal Environment*		1913
Maxwell, G. E. Herman and R. D.	*Student's Handbook of Gynæcology*	2nd Ed.	1913
Rolleston, H. D. ..	*On Writing Theses*	(2)	[1911]
Sawyer, Sir J. ..	*Coprostosis*		1912
Walsh, D.	*Diseases of the Skin*		1913
Wanklyn, W. M. ..	*How to Diagnose Smallpox*		1913
Williams, F. H. ..	*The Rœntgen Rays in Medicine* (4)	3rd Ed.	1903
Wright, D. D'A. ..	*Treatment of Hæmorrhoids*		1913

TRANSACTIONS, REPORTS, JOURNALS, &c.

Archiv für klinische Chirurgie	Bd. XCIX	1912
Bäder Almanach	(3)	1913
British Medical Journal, The	Vol. I	1913
Bulletin de l'Académie royale de Médecine de Belgique	Tom. XXVI	1912
Clinical Journal, The	Vol. XLI	1912–13
Deutsche Zeitschrift für Chirurgie	Bd. CXX	1913
Hospitals and Charities, Burdett's		1913
Journal of Hygiene, The	Vol. XII	1912
Lancet, The	Vol. I	1913
Library, The	3rd ser., Vol. III	1912
Luzerne County Medical Society, Transactions of the		1911–12
Progressive Medicine	Vols. I, II	1913
Smithsonian Report for 1911		1912
Wiener klinische Wochenschrift		1912

Obituary.

WILLIAM HENRY STEVENS, M.R.C.S., L.R.C.P. Lond., L.S.A.

He was born in 1862, and died in 1913. Educated at the Bristol Grammar School, he afterwards became a student at the Medical School of University College, Bristol. After becoming qualified in 1886, he entered into partnership with Dr. Roden, of Droitwich, and was soon appointed as Medical Officer of Health to the Borough of Droitwich. He thus became familiar with the methods of the hydrologists, but was never greatly impressed by the therapeutic potency of the high gravity saline baths of that town. After three years he returned to Bristol, and became medical officer to several societies, including the Foresters and the Clifton Friendly Society, and established a surgery at Dowry Parade. His diagnostic powers were quite good, and he was much appreciated by a large clientèle of patients. Recently he had become much interested in the occult sciences, and had great belief in suggestive treatment in nervous affections, insomnia and melancholia.

As amusements he once took up photography with considerable success, and for many years was a keen member of the Rodway Golf Club.

His end came in a somewhat tragic manner, for whilst bathing in the sea at Weston-super-Mare, on August 2nd, his daughter saw him fall down in shallow water. He picked himself up, gave a weird laugh, and fell down again. He was then dragged out in an unconscious condition with right hemiplegia, and he never spoke again or showed any sign of consciousness. His kind and sympathetic nature endeared him to a large circle of patients and friends, who will long remember his devotion to their welfare, and will regret that his useful life should be thus curtailed at the comparatively early age of fifty-one.

Local Medical Notes.

University of Bristol.—Students of the University have recently passed the following examinations:—

University of Bristol.—*M.B., Ch.B.—Intermediate Examination:* Oliver C. M. Davis, H. Archer. *Final Examination, Part II:* E. Christofferson. *M.D. (Honours):* R. S. S. Statham. *D.P.H.:* T. S. Bradburn, Christopher C. Court;

Part I, W. R. Cooper, J. R. Kay-Mouat; *Part II*, P. Moxey. *B.D.S.—2nd Examination:* W. H. Greet, R. H. Turner.

F.R.C.S. ENGLAND.—A. E. Iles.

D.P.H. LOND.—R. G. Johnson.

UNIVERSITY OF LONDON.—*M.B., B.S.:* Helen P. Barnes, W. Salisbury, E. W. Wade. *1st Examination for Medical Degrees:* R. B. Britton, D. W. Evans, W. H. Royal, G. E. Tilsley. *2nd Examination (Part I):* J. D. Champney, A. H. Morris.

CONJOINT EXAMINING BOARD OF ENGLAND.—*Medicine, Surgery, Midwifery:* H. J. Orr-Ewing.* *Medicine:* W. E. Taylor, H. J. D. Smythe. *Surgery:* H. W. Cooke.* *Midwifery:* H. J. D. Smythe, B. J. Fayle; *2nd Examination,* Margaret Lister.

L.D.S., R.C.S. ENG.—*Chemistry and Physics:* H. C. R. Aubrey, C. M. John, R. V. Knight, W. H. B. Stride, E. F. Vowles. *Chemistry:* G. M. Haydon, G. M. Hicks, W. G. Milton. *Physics:* A. L. Morgan.

APPOINTMENTS.

George Parker, M.A., M.D., has been appointed Sole Lecturer in Forensic Medicine and Toxicology at University of Bristol.

Oliver C. M. Davis, D.Sc., has been appointed Demonstrator of Forensic Medicine and Toxicology at the University of Bristol.

R. S. Statham, M.D., Ch.B., has been appointed Registrar to Special Departments at Bristol Royal Infirmary.

B. C. Eskell, M.B., Ch.B. Bristol, M.R.C.S., L.R.C.P., has been appointed Honorary Assistant Anæsthetist at the Bristol Royal Infirmary.

G. W. Spencer, B.A., M.B., B.C. Cantab., M.R.C.S., L.R.C.P., has been appointed House Physician at Bristol Royal Infirmary.

R. A. Kerr, M.B., B.Ch., B.A.O. Belfast, has been appointed House Surgeon at Bristol Royal Infirmary.

W. Salisbury, M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed House Surgeon at the Bristol Royal Infirmary.

H. W. Cooke, M.R.C.S., L.R.C.P., has been appointed Resident Obstetric Officer at Bristol Royal Infirmary.

E. W. Wade, M.B., B.S. Lond., has been appointed House Physician to Bristol General Hospital.

A. E. Iles, F.R.C.S. Eng., has been appointed House Surgeon to Bristol Eye Hospital.

C. J. C. Faill, M.R.C.S. Edin., L.R.C.P. Edin., has been appointed Tuberculosis Medical Officer for the City and County of Bristol.

* Denotes qualification.